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IMITATION

R. STEEL

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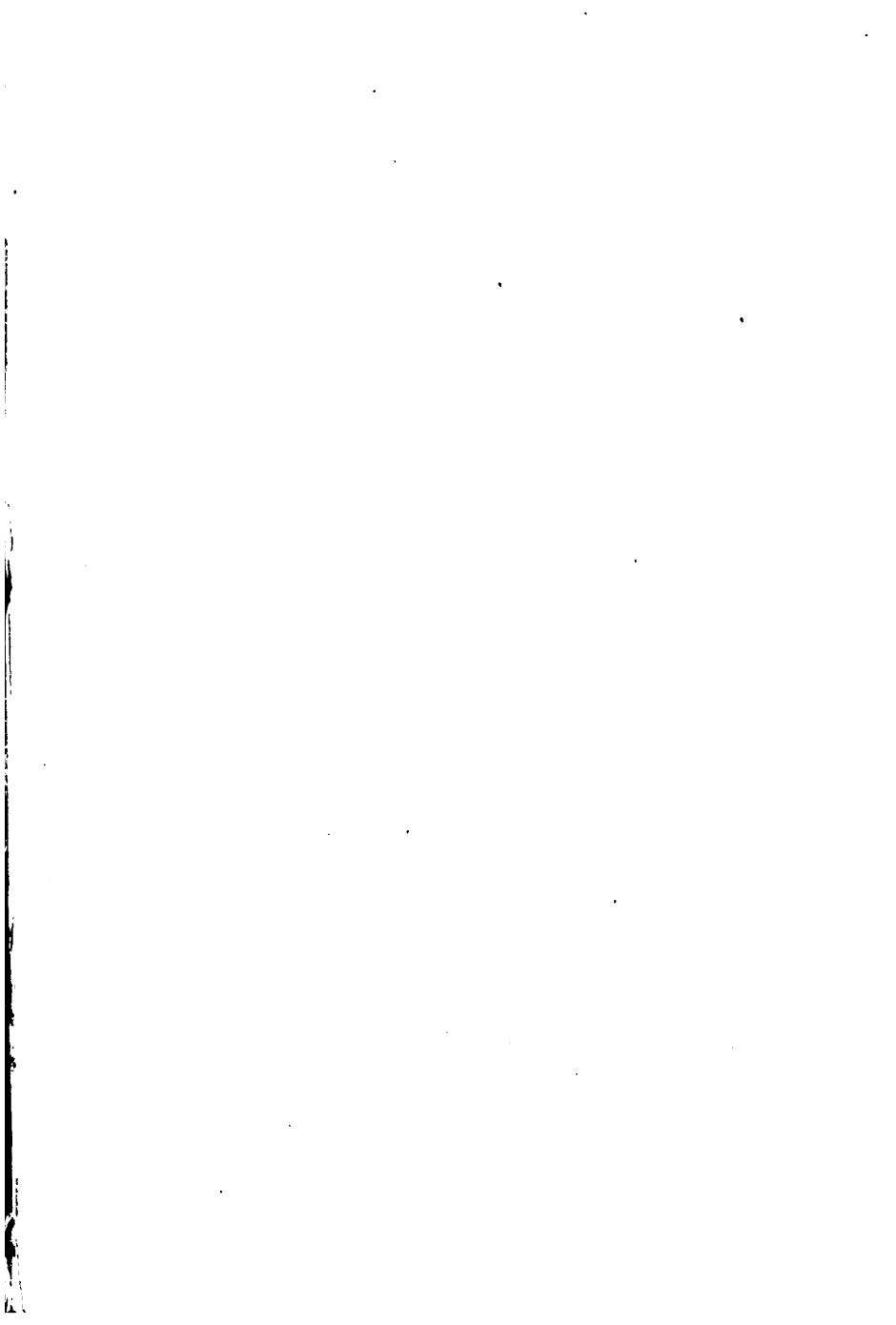
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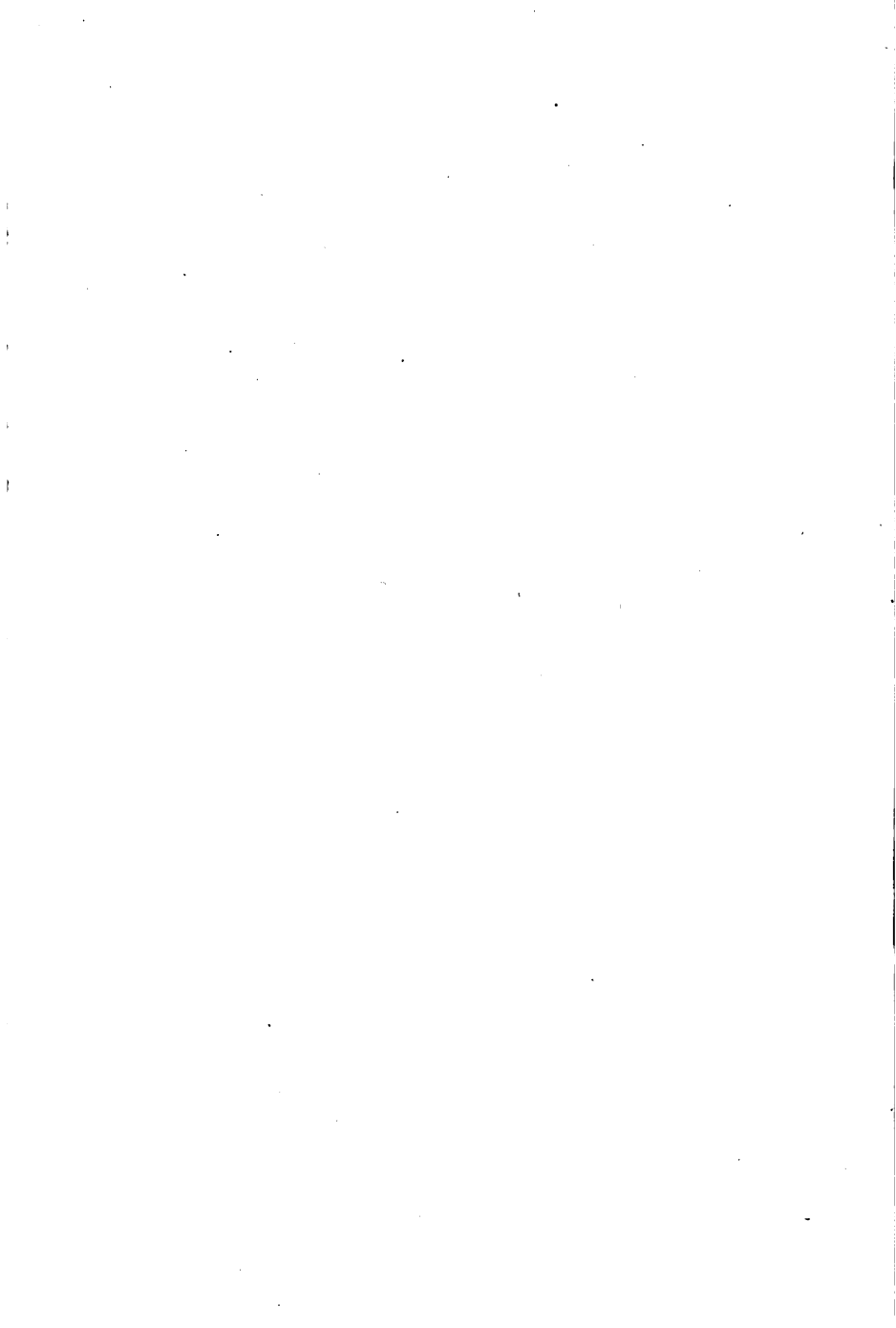
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IMITATION

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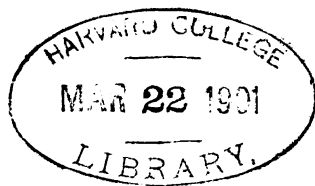


IMITATION
OR
THE MIMETIC FORCE IN NATURE AND
HUMAN NATURE.

BY
RICHARD STEEL.

LONDON :
SIMPKIN, MARSHALL, HAMILTON, KENT & CO. LTD.
—
1900.

Phil 5467.1



Hayes fund

PRINTERS:
D. MARPLES AND CO.,
LIVERPOOL.

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PREFACE.

SOME explanation is due to the reader as to the form of the work which is submitted to him in the following pages. The first three chapters are based upon papers read by the author before the Literary and Philosophical Society of Liverpool during the last twelve months, and these follow the order of the times at which they were severally read. Some parts of the sixth and seventh chapters were also read during the same period; and the Appendix is almost entirely based upon an address delivered to the above-named Society in 1883. The remainder of the work is entirely new.

It may appear that, in submitting as a whole the theory of Imitation as a funda-

mental influence in human affairs and in the natural universe generally, it would have been better to recast the earlier chapters more extensively, to restrict the first one dealing with Economics to smaller relative dimensions, and even to alter the order of the various subjects dealt with. But, although the plan adopted may be fairly criticised from these points of view, I have preferred to retain my line of reasoning in, approximately, the shape and succession in which it developed itself; although in doing so I may appear to diverge from the direct course which should be pursued, and to proceed from more complicated matters to those which are more simple. In the subject dealt with it seems to me to be convenient to reverse that method in scientific research which seeks to work from simpler substances and less differentiated organisms in

order to find explanations of the phenomena exhibited by those which are more complex. This last process is admirably adapted to cases where the enquiry is as far as may be objective only in its character, but is not equally appropriate when we deal with phenomena the basis of which may be referred to a subjective origin. The primary conception of Imitation undoubtedly rests in the first instance upon facts of human consciousness, and although we expand in this treatise the meaning of the term to an extent far exceeding this primary conception, it is still natural under the circumstances to travel from human consciousness, as a centre, to other phenomena in their relatively outward order and significance. The line of argument, moreover, makes the chapters of this book largely independent of each other, and the reader may therefore exercise his

discretion in taking up at the outset that branch of the subject which happens to possess the greatest amount of interest to himself.

ZIG ZAG HALL, LISCARD,

6th November, 1900.

CHAPTER I.

IMITATION IN ECONOMICS.

Political Economy during the Nineteenth Century—Mathematical treatment—Wealth the subject—Ambiguity of term—Value—Jevons and the Austrian School—Analysis of value—Mutual Convenience, the Law of Money—Utility analytically insufficient—Supply in origin precedes Demand—Operation of Imitation—Tobacco—Tea—Dr. Venner in 1650.

POLITICAL Economy as a branch of science practically came into existence with the end of the eighteenth and the beginning of the nineteenth century. Adam Smith's great work, the *Wealth of Nations*, was indeed published in the year 1776, and there had been, prior to his time, many writers and thinkers upon cognate subjects, just as there were mighty men before Agamemnon; but though it was felt even from the first, amongst those best qualified to judge, that Smith's book marked the opening of a new era in Economics, and

laid the foundation as a science of a most important branch of human thought, it nevertheless did not receive the full attention which it deserved from the general public of his day. The *Wealth of Nations* was, however, translated during the next decade into the languages of the great commercial countries of Europe. France and Switzerland, in the persons of Say and Sismondi, furnished able and ready workers in the same field, and the earlier half of the century, now drawing to a close, amply rectified the anomaly to which I have referred. It came indeed to be felt among philosophic minds as if a new world of thought had been laid open, and the science, especially during the second quarter of the century, came to be regarded by many thinking people as providing, if not a remedy for all the troubles of the body politic, at any rate a method of approaching and dealing with them in a scientific and satisfactory manner. And there can be no doubt, that much of the great and wonderful development which has characterized this century above all others was due very

largely in its initiation to the doctrines of the new Political Economy. As an example merely, we have simply to remember that we owe to it that system of Free Trade which, even in its partial adoption, has done more economically than anything else to develop the effective enjoyment of the results of human industry, and which, politically, has become the chief corner stone and bond of union of the greatest and freest empire the world has ever seen. And as an example on the reverse side, the century was still in its early youth when the greatest conqueror of modern times—Napoleon—who by the way is said to have detested the very name of Political Economy, laid an axe, by his adverse conception of a continental system in restraint of trade, to the root of the empire which he had reared by his military genius and success.

All this being so, it is remarkable that a science which heralded the opening of the greatest industrial era of our race, and which has so largely contributed to encourage and

stimulate that industry, should in the later part of the hundred years have become rather discredited in the popular imagination. The rising generation, it is to be feared, look upon its apostles and founders to a large extent as they would upon interesting remains of a pleistocene period, which serve rather to illustrate the history of the recent past than to direct the thought of the present day or anticipate the requirements of the future. Perhaps as illustrating this trend of thought even amongst the seniors and adepts of recent times, I may refer to a public pronouncement in this direction made by our great fellow citizen, the late Rt. Hon. W. E. Gladstone, who, in a speech relating to the Irish land question, delivered on 7th April, 1881, seemed to suggest that Political Economy was better suited to such anthropomorphic conditions as may exist in Jupiter and Saturn than to those of Mother Earth—at any rate so far as our planet is represented by Irish soil.

The explanation of this comparative decline in the public interest in Economical

Science is probably however not difficult to give. Whilst the inhabitants of the world have been gaining wealth by industry and commerce, they have also been becoming more exact in their ideas of things and theories. This is due in part to the habits engendered by the general cultivation of what are ordinarily termed physical sciences, to which so much attention has deservedly been devoted during this century; in which approximately exact relations are sought, discovered, and acted upon, between phenomena and things which are in themselves approximately exact in character and can be expressed with a high degree of accuracy. And this exactitude of thought, imbuing the minds of the students of these sciences, has transfused itself into the mental attitude of all contemporary thinkers. So that pure Mathematics, although still necessarily the most complete expression of exact relations, are no longer the only science postulating such expressions, as is indeed evident from the fact that, until the platform of mathematical expression is reached, no

physical science can in these days claim to have attained any high degree of development.

But Political Economy has made but little advance in this direction. Like some other subjects, it has dealt in the main with popular but inexact conceptions, and thus, like the fallen angel on his way to Paradise, has had to pass through a limbo of vague ideas,

A dark illimitable ocean without bound,
Without dimension, where length, breadth and
height

And time and place are lost.

I do not of course ignore the fact that Political Economy is taught largely, and retains its nominal importance in the curriculum of our higher educational establishments, and that eminent men in our own day make it their chosen subject of thought and dissertation. But the clear tendency seems to me to be to give away and modify the original position of Political Economy by expanding rather than limiting its area, by enlarging the frontier rather than by surveying the country within it, and by merging it as a vassal state

into the wider and still vaguer suzerainty or empire of Sociology. It is not that I dispute the value of the historical and positive point of view in Economics. But this should not be allowed to supersede analysis merely because analysis presents certain difficulties. As Whately well puts it, "We are more likely to advance in knowledge by treating of one subject at a time than by blending together several distinct inquiries," and the more diffuse methods in Economics are all open to this objection. I believe, myself, that the true future of the science lies in a resumption of the analytical method, and that the nearer you can get to mathematical formulæ for the expression of its laws, the more real progress will be made. Notable attempts to do this have in fact been made during the century by writers such as Cournot, Jevons, and more recently by Professor Marshall, but I think it will be evident that, however praiseworthy these efforts have been, they have only succeeded in expressing, under symbols pertaining to the Differential and Integral Calculus, considera-

tions which would be more intelligible to the great bulk of students if expressed in the ordinary terms of language.

I do not desire to undervalue either the genius or the ability of these writers to whom I allude. I would rather pay to them the poor tribute of my genuine admiration of their efforts. But they have had, amongst other difficulties, to encounter the primary difficulty of all Political Economists, which arises from the inexactness of the ideas upon which the science is based, and I am not sure that they have encountered it with full success. This inexactness is notorious to every one who has read Political Economy at all, and I need hardly, therefore, stop to point out that it attaches to all its principal terms, such as wealth, value, labour, capital, exchange, etc.

It is to be remembered, moreover, that by a certain unwritten understanding, all these terms, and, in fact, all the ordinary terms used in the science, are to be employed by Economical writers in their popular and conventional sense, and the result, as might have been

expected, has been to introduce the somewhat chaotic state of things to which I have already alluded.

For my present purpose, however, I shall approach only the basis of Economics, which, from the time of Adam Smith himself, has been regarded primarily as a science dealing with the production and distribution of Wealth. Thus, for example, John Stuart Mill, to my mind by far the most important writer on the subject of Political Economy during the present century, states emphatically that the subject of the science *is* Wealth, of the meaning of which he says every one has a notion sufficiently correct for common purposes; in which common purposes he clearly by implication includes the subject of his treatise. But Wealth, even though consecrated as a term by the leading economists, is obviously not at all definite in its meaning. It carries with it only a vague, although pleasant impression, and has not a clearly cut definition. All sorts of dialectics may, and, indeed, have arisen as to whether wealth consists of commodities only,

or in part of potentialities, or of personal attributes such as those derived, for example, from an education which fits its possessor to fight to advantage the battle of life. And even having regard only to the more material aspect of things an ambiguity remains. For Wealth to most minds probably, and it is to be remembered here again that in Economics we are always hampered by the necessity of adhering as far as possible to the popular use of terms, Wealth is to most minds probably represented by what we call money, and at any rate in the more highly developed communities the money value of possessions would be considered as the measure of the Wealth of the possessors. But as against this we have to set another conception of Wealth sometimes held separately, and at other times very generally interwoven with the last one, and that is the capacity of possessions to satisfy directly the requirements and desires of the possessors, and this from the natural course of human development in its earlier stages must have been the original, as it is still the most philosophical

form of the idea. But whilst it is philosophical, and would be absolutely accurate for a solitary being who lived a Crusoe-like existence, it fails entirely if we are considering the economic condition of mankind as an existing whole.

We thus arrive at the position that the idea of Wealth from the general standpoint of humanity is compounded of two factors; (1) the aggregate exchangeable value, and (2) the aggregate capacity of yielding satisfaction to the possessors, of its component parts. Where the conditions of trade and barter are most effective, the former factor is the more important, and becomes more or less predominant according to the freedom of the markets and the facility for sale and exchange of the subjects of Wealth. Where the state of life is furthest removed from trading activity, the second factor is the more important, and varies with the prevailing taste of each locality and period of time.

When, however, you come to deal with the production and distribution of a something

formed by the coalescence of at least two variable factors, varying relatively to each other, and also intrinsically in themselves; and when, moreover, a law of continuity of either series of variations is difficult to assign, it is evident that that something is an extremely slippery and shaky basis from which to work out general conclusions applicable to the community at large.

The inherent difficulty thus arising has been clearly apprehended by many writers, of whom I would mention for the purpose of this treatise, Professor Jevons, whose untimely death cut off a brilliant and promising career, and who preferred to approach Political Economy from the point of view of Utility rather than of Wealth, and who has been in substance, though not in phraseology, followed of late years by the so-called Austrian school of Economists, of whom Mr. William Smart may be regarded as the representative in this country. Jevons differs from these later writers in banishing the term Value as a deceitful and unreliable phrase, but he of

course does not get rid or really desire to get rid of the ideas lying behind it; he almost entirely rids himself also of the term Wealth, which, under his system, would consist merely of Utility or utilities in the larger sense of the term. Although he disdains the use of the word Value, whilst the Austrian school retain and make much of it, the fact is that they are really essentially at one with him, and that the apparent difference between him and them is a mere question of phrasing. Of the Austrian school it may at any rate fairly be said that they approach Economics from the side of Value rather than of Wealth, and paradoxical though it may seem in the face of Jevons' disclaimer, I think that he practically did the same thing under a different name.

I believe that this departure is entirely in the right direction, but whilst paying all honour to these writers, I do not think they have relieved themselves by this change, as fully as they might have done, of one of the ambiguities which beset Economics. For it is evident that Wealth is, and must be, a mere

multiple of Value, it being the fact that the items of which Wealth consists are valuable which makes them constitute Wealth. The ambiguity of the multiple pursues, naturally enough, the sub-multiple or factor, Value, and just, therefore, as Wealth may be regarded either as intrinsic, or as consisting of the capacity to satisfy its possessor, so also may Value as its factor be regarded either as intrinsic or as assessable by the extent to which a commodity or thing satisfies human requirements. And accordingly the school to which I have alluded (I must not be understood to include Jevons in the remark) recognise two sorts or forms of value—objective value and subjective value—answering to the terms used by the older Economists, commencing with Adam Smith himself, of “Value in exchange,” and “Value in use.”

I have no doubt myself, however, that this ambiguity in the term Value can be got rid of by carrying the analysis a stage further, and that it can be shown that these separate ideas above referred to really merge into one, and

that the idea of Objective Value, or Value in Exchange, coming back as it does to the expression of Value in money as the most convenient ordinary vehicle of the conception, can, in reality, be reduced to the same category as the other or second idea of Value, when this last is properly amplified, as I now proceed to show.

Starting to prove this, as is most convenient, from the popular money conception for reasons already indicated, we find in the first instance that money, except as regards its own subjective value, in relation to which it belongs already to the second category, is merely representative of other things, those things being the things for which it may be itself exchanged, that is to say, for all other things or some of them. There is no mystery about money in this regard, although many treatises have dealt with the subject, and I wish to state in passing the true general law which always governs it. A very great number of easily-handled commodities, amongst which are cattle, gold, silver, copper, iron, tobacco, fish,

salt, shells, brick-tea, and others, have been used as money in different ages and different countries, and some of them will probably be so used to the end of human time, the chief modifying tendency of modern society being to use instruments of credit, which is in itself a measurable thing, as the most convenient sort of money at any rate for interchange upon the larger scale. The real law of what constitutes money is easily deducible from even these few data, and should be described accordingly as the law of *Mutual Convenience*, and expressed in some such words as these:—*Money is always the commodity or thing which is mutually most convenient as the means of satisfying an exchange between the person who pays and the person who receives in any transaction.*

Bearing this in mind, we see that we are at once able to eliminate from the objective category, with which we are for the moment dealing, the idea of “money,” and to substitute for it the phrase “other commodities or things.” And thus Objective Value, or Value in Exchange, simply means, therefore, the

capacity of one thing to become the equivalent, to those who make exchanges, of some other thing or things. But this capacity or power cannot be objectively intrinsic in the things themselves, and must, therefore, rest upon a process of estimation outside of themselves. Such an estimation might conceivably be made by any sentient being, and very possibly is made to the limited extent of their range of faculties and knowledge by all sentient beings, but in human affairs, with which alone of course we are fully competent to deal, this estimation must be a human estimation, or, in other words, a subjective estimation or Subjective Value, and in presence of this fact, Objective Value thus becomes reduced and merged into the second category which is that of Subjective Value in general.

And now let us deal with this second and inclusive category itself of Subjective Value, or, as the older Economists term it, Value in Use. Professor Jevons, as we have seen, abandons the use of the term Value altogether, substituting for it the phrase Ratio of Ex-

change, which may be taken as answering primarily to Objective Value, but he really retains the idea of Subjective Value under the term of Utility taken in the broad and philosophic sense of that word, meaning the capacity of things to satisfy human requirements and desires. He is substantially followed in this by the Austrian school, who however retain, as I pointed out before, the word Value: Jevons' Utility really corresponding with their Subjective Value, which they base upon Utility in his sense of the phrase. It might, perhaps, be possible by stretching this term of Utility very much to make this use of it agree with a largely preponderating number of the facts, but it is to my mind necessarily analytically inadequate, for a reason which I must now venture to point out. If Subjective Value is fixed by Utility, it is evident that a new thing such as had not been known to exist before could have no Subjective Value in its origin, for its subjective utility could not have existed at all. But the facts of experience contradict this. Whether the thing

be a new commodity in the more material sense, or whether it belongs to a less material order, as a power, potentiality, or facility, it does certainly, even at its first coming into existence, possess a Subjective Value; and the bare fact of a supply of it being possible creates, in many cases if not in all, a demand for it which is not measured in the first instance by a Utility, which by the hypothesis is still quite unknown. The Subjective Value at first must indeed have essentially the cost of production as its only provisional measure.

It is somewhat singular that economists, even those who do not base their systems upon Utility, have never recognized the simple thesis which lies under this circumstance, that is to say that, analytically, the original supply of an entirely new thing always precedes the demand for it.* It is true that supply and demand afterwards walk largely hand in hand together, acting and reacting upon each other, but in

* Lord Charles Beresford, however, in an address, delivered 24th November, 1899, remarked that, "Supply creates demand despite the seeming paradox;" which is quite in accordance with the view above expressed.

the origin it is not so. They are not even like twins, between whom a necessary priority must exist, but they may rather be said to stand to each other in the relation of cause and effect. It is not until a thing becomes known and discovered to mankind that any demand for it exists at all. This seems to be so obvious, perhaps, as to be nearly of the nature of a truism, but my excuse for stating it so emphatically is that it has not been to my knowledge hitherto recognised by economists, that it renders the utilitarian theory of Subjective Value insufficient, analytically, to account for some of the facts, and that it is largely interdependent with an important economic consideration with which I shall deal presently, and to which it is one object of this chapter to lead up. For the moment I point out that it is evident that this fact strikes at the root of the analytical completeness of the utilitarian view of Value, though I do not indeed question that Utility has still a large place in Economics. But at present I must insist upon the point that you have only got to discover a new thing

and the mere fact of its existence in many cases creates a demand for it, and human nature, in the aggregate of course, straightway adds on to itself a new requirement, although it would obviously be straining language to say that the value of the new thing consists in its capacity to satisfy anything in the first instance except possibly a love of novelty. Were there indeed no better way of accounting for the whole case of Subjective Value, it might be necessary to incur the strain of attributing it entirely to a far-fetched idea of Utility, but that there is a better way, and one which goes entirely to the root of the matter, I will now endeavour to show.

One of the most universal of natural influences, affecting probably all creation, and certainly all human beings, is the tendency to imitate. It may be described as *a directive tendency which exists in all natural units to imitate or follow the action and behaviour of other units in proportion to their natural propinquity, using the term propinquity in all its senses*: a directive tendency which is absolute

except in so far as it is deflected by other forces, and which, in conjunction with natural selection and the survival of the fittest, may probably be made to account for the whole differentiation of life as known to us. As we know it in human consciousness we see on the surface that almost the whole of man's intellectual being is built up by it through the processes of education, natural observation, and continuous doing and thinking as other human beings do and think, or as they have done and thought before us. If you take out of the intellectual constitution of a human being the results of Imitation in its various forms, you have practically little or nothing left. Imitation,* from this point of view, may be regarded as the subjective aspect of a universal directive agency, such as that, perhaps, of which gravitation is an objective function. It may be regarded as comprehending within itself all those phenomena which we class under the heads of heredity

* To some minds the phrase "Mimetic Force" will probably be preferred to that of "Imitation."

and instinct, and by expanding the meaning of the term may be illustrated in the unconscious so-called instincts of plants and animals, including human beings, which attend them from the moment they come into separate existence, and which are continuous in kind with those instincts of the development of which we, as human beings, are more conscious; which rise by a continuous and unbroken series up to those habits or results of self-imitation of which we are absolutely conscious; and come finally to that purposive imitation which is a still more distinctively intellectual process. In its many manifestations there is no breach of continuity in the various series of the action of Imitation, conscious and unconscious, and we are, therefore, bound to assign over to the same generating function the results of this subtle and all pervading influence, which at one extremity of things shows itself, perhaps, in the vibrations of the ether, which displays itself in molecular activities of all kinds, and which stretches through the whole of inorganic and

organic existence to the highest ranges of human thought. It is sufficient to say for our present purpose that it is no doubt in human experience that the influence of Imitation may be best verified by us, as human beings, and in this it becomes the subjective aspect of a universal world force. The efficient origin of Imitation lies necessarily beyond our intelligence. But just as we shall see that it influences Economics, so also does it pervade the whole of the human atmosphere. Whether it be in language, politics, law, the fine arts, religion, morphological and ceremonial, or in habit which finds its confirmation and rests its throne upon self-imitation, or in any or all of our intellectual phases, Imitation is always there in the final analysis as the great directrix of human life and conduct.

The bearing of these considerations upon the question of the origin of Subjective Value is obvious. Although the intrinsic qualities of things in themselves, when once *ascertained* as answering to certain primary requirements of human nature, will always seem to give certain

things a prior claim to inclusion in the category of Subjective Value, it is really the larger and inclusive influence of Imitation which in the first instance brings every known thing into its purview. Every new thing creates what may be termed a new and added want or requirement of humanity taken as a whole, and it is afterwards that Utility comes in, in the large sense of the term, and regulates ultimately, subject to secular changes, the relative and respective value of the new thing to all other things.

All this sounds perhaps a little abstruse, and I am bound to supply something of the nature of a concrete illustration. The only difficulty in doing so lies in the *embarras de richesses* which lies around us, but to throw some light upon the influence of Imitation, I trust it will not have something of the effect of an anticlimax if I take in this connection the very familiar instance which is to be found in the use of the well known commodity, Tobacco. As a matter of fact, so far as I can ascertain, the herb tobacco was not known in

the old world until the discovery of America. It was first observed in use by Columbus and his followers, as may be gathered from certain records, but it was not introduced into Europe until the time of Elizabeth — Sir Walter Raleigh being one of those who, by his example, brought about, or rather accelerated, the operation of Imitation with regard to this humble matter. There can be little doubt that both Sir Walter Raleigh and his imitators must have suffered a certain amount of personal discomfort in the beginning of the practice of using tobacco, the laws of physiology being clearly the same in the 16th century as they are at present. But in spite of this circumstance, one not confined to these comparative innovators, but perpetuating itself in the persons of most neophytes to the present day, the use of tobacco, whilst in its origin for each individual clearly imitative, has become one of the most widely extended of human phenomena. It is quite true that in a very small number of cases the habit of using the herb may be the consequent of medical advice, but

it is at least equally true that, in the vast majority of cases, a man smokes, or takes snuff, or chews tobacco, in the first instance for no other reason than that he sees other men doing the same thing, and that what is originally merely an imitation of someone else, acquires the additional force of self imitation, which we term habit, and becomes an inveterate practice from which few endeavour to release, and fewer still succeed in releasing themselves. It is a forcible illustration of the process that we may sometimes see the early genesis of its adoption repeated on the same imitative lines by urchins in the street and young boys attending school: and the imitativeness of the habit is illustrated, indirectly, in the negative fact that female children rarely go through the ordeal, just because their natural propinquity, which word I use in the large sense of the term, is to the women of the community, who do not often use tobacco; the determinant as between the adults of the two sexes obviously being that its use is hostile rather than friendly to the domestic cleanli-

ness, in the assertion of which the fair sex have always had the main charge and authority.

The history of the consumption of tea in Europe furnishes an illustration of a similar kind. The use of tea in the Old World, including, of course, China and Japan, was a matter of great antiquity. And it is a singular illustration of what we otherwise know from history of the jealous policy of isolation pursued by these two last-named countries that nothing was known of tea in Europe till about the middle of the 17th century. This fact is, I believe, generally admitted, but I happen to have a singular confirmation of it in an old book in my possession. It has the important title, *Ars recta ad vitam longam*, the right way to a long life, and was published for Dr. Venner, of Bath, in the year 1650. Now one express object of this book is to give advice upon the subject of diet and other matters, and most minutely does the worthy doctor deal with all sorts of food and beverages. He discusses

learnedly the question whether we should eat two meals or only one meal per day. He has strong views upon the suitability of the different sorts of sack to different temperaments. But from first to last he never even mentions tea, and it is, I think, quite clear that, if an eminent physician, residing in Bath, of all places in England, writing an exhaustive treatise upon diet, says nothing about tea, it is because he had never heard of tea, and, consequently, that tea was unknown even in those superior social circles of which he himself was an ornament, and in which he was an adviser. As a matter of positive history, I find that Pepys in his diary gives us the first notable reference to the use of tea in England, under date of 25th September, 1660, in the words: "I did send for a cup of tee, a China drink, of which I never had drunk before."

But once introduced, the imitative tendency has initiated the consumption and use of tea in every household, until, like tobacco, it has long endeared itself to the heart of every English Chancellor of the Exchequer. And in

its use it is to be noted that there is no differentiation as regards sex, unless, indeed, it be that owing to the method of its preparation, which requires a certain amount of domestic convenience and manipulation—(unlike tobacco, the use of which militates somewhat against indoor cleanliness, and lends itself best to outdoor treatment)—the consumption of tea is on an average greater with the fair sex than with the ruder and masculine.

It is not necessary to multiply illustrations further, although they can be drawn from every department of human conduct. Just as the traditional African king of the past was said to revel in the glories of a tall silk hat, and desired to possess blue beads, red blankets, and highly colored Manchester prints as soon as they came to his view, so is a corresponding process true of all human beings in every degree of development. The mere fact of others possessing a thing which the human unit has not got, begets in him or her a desire, more or less keen, according to temperament.

and proximity to it, for its acquisition, and thus it comes about that the element of Subjective Value on the part of humanity as a whole, which is the true basis of Economics, is itself based, as regards its primary origin, upon that imitative influence which it is the object of this treatise to discuss.

CHAPTER II.

IMITATION IN PSYCHOLOGY.

Imitation in sense processes—In Memory—In Reasoning—
Canon of the Logical Process—Imitation in Imagination—
In Education.

I STATED in the course of the last chapter that it was in human experience that the working of Imitation could be most easily verified by us as human beings, and I now propose to consider how far this can be actually demonstrated by a review of some phases of its human aspects.

In the next place, then, let us deal with the matter from the purely subjective and psychological point of view. In doing so I do not postulate any elaborate theory of the human mind or of consciousness. It appears to me that the considerations about to be brought forward are consistent with any metaphysical theory: but in order to clear the way I would

define my own personal attitude in this regard as being that of the school of Natural Realism, the views of which have been clearly exhibited by Reid and Hamilton, and which appear to me to be the only serviceable and practical form of metaphysical theory. I assume, therefore, in accordance with the doctrines of this school that things are such as they seem to be to the observing subject, and that, *mutatis mutandis*, their qualities are correspondent, at least in respect of simultaneous and dependent variation and probably in their actual nature also, to the mental conceptions which represent them in the mind of the knowing subject or person.

Under this aspect, then, mind and its processes become resolved into a certain few primary conceptions, and we are enabled to disregard the verbal subtleties which sometimes trammel systems of metaphysics. Of these primary conceptions it will be found in practice that two are especially predominant in human psychology, these being Perception on the one hand, and Memory on the other. I do

not deny of course that there are or may be other primary mental manifestations, but it is sufficient for our present purpose to consider the mind of humanity in the first instance from these two points of view in order to illustrate the views propounded with regard to Imitation as affecting the mental aspect of human beings.

I take, then, the case of Perception first. It may be assumed clearly that all Perception in the sense of natural observation comes to us through the channel of the senses, and that we can only observe in so far as we see, hear, feel, smell, or taste. It is not necessary to our proof, however, to show that this is absolutely so without any exception, for every one would admit that in any case it is through these channels that the great bulk of observations reaches humanity.

Everyone will probably admit also that the most important of these avenues of sense is that of sight. By means of sight most minute and complete details are conveyed to our apprehension, and it is through the medium of


sight that we are most conscious of a world external to ourselves. How then are the impressions of sight produced? They are produced, as we know from the construction of the human eye, in the same way as an image is thrown on a screen by a camera or magic lantern. And thus there is an actual picture or Imitation of the objects which are seen upon the retina. It is of this picture that our mind is conscious, and thus every process of sight is based upon an Imitation or copy of the external objects seen manifested upon the retina. Nor, indeed, do we stop here. If we attempt to describe in terms those things which we see, we at once find that we do so in language which proves a comparison between the object now seen and some other object or objects which we remember to have seen before. This implies in addition to the present image created by observation a recollected image resulting from previous observation, although we may be unconscious of any effort in the recollection, and this the more when it is the generalised resultant of a great number

of previous impressions. So that we come to this, that all observation by vision or sight implies in each act an Imitation of the objects observed, and in most cases an imitative recollection of objects observed previously.

The case with regard to the sense of hearing is not quite so clear. We know, however, that sound consists of vibrations of the medium through which the sound is conveyed. These make themselves manifest to the organism as sound, and though it may seem to be rather straining language to say that we hear vibrations, it is nevertheless certain that the subjective thing, "sound," and the objective things, "vibrations," vary simultaneously, and are absolutely interdependent; it is evident, therefore, that in the case of sound, as in that of sight, it is the effect of the physical facts as impressed upon the sensorium that is reflected in consciousness. Whether this effect is the same in kind as the vibrations themselves is not material, inasmuch as the mental state produced is undoubtedly a subjective presentation of the sound vibrations. A record

remains of them, moreover, which is made use of whenever the human being desires to reproduce sounds, as is instanced familiarly in the cases of language and music, which are both purely imitative uses of sounds previously heard. And it is clear that, if the reproduction is imitative, so must the original impression which is reproduced have been imitative also. For in speaking, the human being always repeats, under either new or old combinations, some of the sounds he has already heard: and in producing music, which is a sort of language, he also repeats sounds which he has heard either in their original shape or recombined as nearly as his imitative powers will permit.

I do not propose to deal in detail with knowledge derived through the other senses of taste, smell, and touch. It is not unlikely that these three are really in some sort one, since taste and smell are both a sort of touch; in the former case of a direct character, and in the latter directly due to the emanation of subtle exhalations, whose impact upon the



sensorium conveys the sensation of smell. Of all of these, however, it may be said that the impressions which they convey are imitative of their objects in the sense in which we know those objects at all, that is to say, they are subjective presentations of the material data furnished by the objects, and are therefore imitative of some of their properties. So that, to sum up, each sense has its special sphere of imitative presentation and the aggregate of what we know by sense perception of anything external to ourselves is the collective result of all the total presentations derived through the different sensory channels.

We know all things, then, primarily by imitative perceptions. And it is true of all of these that they are remembered with a strength proportional to the degree of attention which we have bestowed upon them. The sense impressions are stowed away in an impalpable storehouse, the position of which we cannot define, and are there for use as may be required. There is no more wonderful fact in the mental constitution of man than that there

should be this enormous capacity of retaining past impressions of all kinds lying quite dormant and unobserved until summoned by an effort of recollection. There can be little doubt that the memory is the real *continuum* in which the identity of the *Ego* consists. But for our present purpose, all we have to note is that the representations in the Memory are always purely imitative of the original impressions. In cases where the use of a recollection is very frequent, we become unconscious of any effort in recalling the individual impression, but where it is less frequent, the effort is of all degrees of arduousness in an inverse ratio to the frequency of the effort.

I do not know that it is necessary to give any illustration of the purely imitative character of memory, but it may perhaps be not impertinent to do so. Take the case, for example, of a poem which you have learned by heart, as the saying goes, and which you afterwards repeat from memory: What are the psychological processes involved? In the first place you have read or heard the poem, and

the exact impress or Imitation of that poem has become stamped upon your memory. When you repeat the poem afterwards you are giving voice to an exact Imitation of those words as recorded in your mind; and this is so completely true that if you have learned the poem by hearing instead of reading, you would most probably repeat it with something of an imitative effect as regards manner and emphasis, in addition to the verbal imitation which consists in the use of the words themselves.

Take the further illustration of the memory of persons or places. The record in your mind is a more or less complete image of the salient appearances which have drawn your chief attention, and is, in fact, an Imitation of them. When you recall the place or the person the imitative picture returns, and it is these very original salient appearances which come out most strongly in the review. But it is, I think, unnecessary to labour the point further, as the purely imitative character of memory is a fact within the experience of everyone.

We have thus seen that human beings observe by means of Imitation, and that they remember by means of Imitation. I now propose to deal with another psychological process of a slightly more complex character—that of reasoning.

All reasoning depends upon comparison, and the true canon of the affirmative logical process is, in my opinion, reducible to the following expression :—*

That which is true of a thing is probably true of its like ; the degree of probability depending upon the extent and thoroughness of the resemblance.

But whether we agree to this canon or not, everyone will admit that without comparison there can be no reasoning. Comparison then, as the term implies, means the comparing one thing, fact, or judgment, with one or more other things, facts, or judgments. Now the mental presentation of each such thing, fact, or judgment, can only be obtained either by direct Observation or by recollection through the Memory. But we have seen that all Obser-

* The proof of this will be found in the Appendix.

vation is a result of an imitative process, and that the memory is only a record of an imitative process. So that the whole of the data upon which the process of reasoning by comparison is based are imitative, and consequently Imitation is its psychological foundation.

There is one other psychical form with which I will now proceed to deal—that of Imagination. The term is sometimes used in a restricted sense as applying to efforts of recollection which call up to the mind scenes and so forth which we have actually witnessed, but in this sense it is a simple imitative presentation of the memory such as has already been dealt with. But the term Imagination is also used as representing the mental process by which we place before our minds something new in point of combination, the details of which are all, however, the result of past perceptions which we have made. Thus the work of the most imaginative writer of fiction or artist is simply a recombining of ideas already derived from observation and preserved

in the imitative *continuum* of Memory; and thus, in fact, it is universally recognised that the criterion of excellence in any imaginative work, whether of the author, the actor, or the painter, is its truth to nature, that is to say, its imitative quality, so far, at least, as the natural things we view with most interest are concerned. We can only imagine in terms of past experience, though we can shake 'the mental kaleidoscope and recombine the terms. And, therefore, as Observation is accomplished by imitative sense processes, and as Memory is imitative also, and as the imaginative result in its highest excellence is imitative too, it follows that in imagination from start to finish we are in the presence of a remarkably clear exhibition of the imitative process in human psychology.

I shall here deal in conclusion with only one of the more concrete illustrations of the operation of Imitation in human life, and that is in the processes of Education. I pass over those halcyon years in which parents watch over the early life of the children whom God

has given them, and in which children learn to talk by imitating their elders, and acquire many fundamental ideas which will influence the whole of their lives from the tender precepts and examples which are afforded to them: it is sufficient to say that in this period all the psychological development is from the necessity of the case imitative. But let us send the child to school and what do we find? Of course in its games it imitates its fellows: but in the schoolroom it also imitates, in order to learn. First there is the alphabet: the child by repeated efforts of sight becomes familiar with the letters, that is to say, it has an imitative picture of each of them on its memory. It is then taught by the sense of hearing that certain combinations of letters represent certain sounds, and so it goes on in the imitative path until it can read. Then there is also the writing lesson. From *pot hooks* carefully imitated it rises through the gradations of large hand, round hand, and small hand, and by copying beautiful copperplate moral axioms, but always by Imitation,

to the status of a writer. And then there is the arithmetic, in which the child begins by learning to count, by learning its multiplication table, and so on through a long-continued vista of imitative operations, until it becomes an arithmetician. And, not to weary the reader with detail, so the process goes on continually in relation to all the branches of knowledge with which the mind is stored, not only until school is left behind, but far into the years of mature life, and even, indeed, to its end. And who can say that in the life to come a new cycle of Imitation will not follow, whereby poor humanity will rise to a far higher and nobler development than any which the conditions and limitations of our earthly career hold within the range of possibility.

CHAPTER III.

IMITATION IN ETHICS, RELIGION, AND POLITICS.

Imitation not necessarily Conscious — Inter-dependence of Religion and Politics with Ethics—Different Standards—War — Authority and Utility — Slavery and Duelling — Persistence of Religious Form—Politics as Influenced by Imitation.

It must not be supposed that by Imitation, in this treatise, is meant conscious imitation only. This becomes obvious from the very fact that in our first chapter it was suggested as being operative in inanimate as well as animate nature, and is clear indeed also from the consideration that in living beings instinct, one of the dominant but in its origin unconscious incidents in biology, is likewise referred to as exhibiting a phase of its action. I am not, indeed, fond of the word Imitation, partly for the reason that it is apt to be taken in a narrower sense than that which I desire to

ascribe to it, but there is no other one term known to me which so nearly describes the all-pervading imitative influences which are induced in natural units by other natural units. The phrase "mimetic force" is the nearest alternative expression; but to this also there are possible objections; and I therefore prefer to retain the word Imitation for the purpose of this treatise. And there is no etymological inaccuracy in this use of the term. Like many other words it has a recognized variety of meanings, all of which are legitimate and closely allied to each other, though the primary sense of it in popular usage, and in the usage of some well-known scientists as well, would be perhaps open to the limited construction referred to in my opening sentence.

In a comprehensive theory, however, such as we have in hand, where many different phenomena of different kinds are referred to the one function, it is clear that the widest definition, so long as it is coherent and reasonable, is the best, for the wider includes the less

wide, and thus takes in phenomena which a narrow definition would exclude.

Apart from making provision for the immediate physical requirements of nature, the subjects of thought which occupy by far the largest part of most men's minds, are three in number, that is to say, Ethics, Religion, and Politics. And, whilst putting Ethics in the front rank of the triad, I do not hesitate to admit the fact that the great majority of mankind would disclaim any such statement so far as they were concerned. For just as Molière's celebrated character had been talking prose all his life without being aware of it, so also does it happen that the term Ethics conveys to a large number of persons a distasteful idea of vague philosophizing upon which they would not wish to spend any portion of their thought, but which they would rather leave to learned professors, as they would the allied subject of metaphysics.

Under the more familiar aspect of a theory of *that which is right and that which is wrong*,

which, after all, is the whole real core of Ethics; and without conceding anything further in the dread direction of abstract thought, it will be found, however, that men will generally admit that such considerations do indeed play a large part in the operations of their minds; and thus it comes about that our initial proposition is true of Ethics, although the technical term does not always commend itself to the public taste.

It is evident, moreover, that these three subjects of Ethics, Religion, and Politics, are largely interdependent with each other. There is no form of religion which does not assert pretty definite ideas of right and wrong as associated with it. Indeed, to many, if not to all, religious form in one important aspect is essentially a doctrinal teaching of what constitutes right and wrong, possessing at the same time a supernatural and divine sanction and authority. I do not, of course, say or believe that such a view of religion is complete in any sense, but it is correct so far as it goes, for there is no existing form of religion which

does not lay down authoritative precepts to guide the conduct of its adherents, and which does not indicate within broad limits that which is right and that which is wrong.

So again with Politics. However much the lines of political thought may vary, there is always one idea running through all their modifications, and that is the good of the political unit or community. Even a despot, and the supporters of a despotism, whilst reserving to themselves primarily the personal advantages of their positions, do no doubt, so far as they think outside those positions at all, honestly believe that their modes of administration are, all things considered, best for the community of which they form parts; and, on the other hand, in all representative and democratic communities, the idea is certainly dominant that in such a degree of democratic institutions as they possess is to be found a clear advantage to the general good. There is thus here again a tacit appeal to a standard of right and wrong, though it is not necessarily the same standard as the religious one. For it

is only in a theocracy that the two standards, the religious and the political, merge into one, and under all other forms of government the divergence is more or less complete. Broadly speaking, the political standard is that of expediency; that is right which is good for the community, and that is wrong which is adverse to its good.

It is thus clear that Ethics lie near the roots of both Politics and Religion, and may indeed be regarded from the non-controversial point of view of these subjects as an original element in both. In this limited aspect, Religion becomes simply a derivative of Ethics, and Politics a more complex derivative: for whereas, in Religion, the standard of right and wrong is in the main authoritative, the standard in Politics is mixed; this last appealing partly to the various religious standards in the minds of men, but also still more largely to the expediency to which we have referred. It is not that there is necessarily any inconsistency in this attitude as regards Politics. For whilst all men would willingly admit in

theory the superior authority of the religious standard, most men would in practice agree, that in large and complicated matters of public policy it is very difficult to apply the religious standard at all, and that for all working purposes communities must look to probable results, that is to say, to expediency, in a fair and honourable construction of the term.

An easy illustration of this may be found, for example, in the views of all civilised communities with regard to war. It is evident that war in the abstract is a hateful and terrible thing, which in its action violates all the fundamental precepts of Christianity, and would therefore be condemned by the positive and authoritative code of Christian morality. But the question of conducting a war being a political one, expediency comes in as the further standard of what is right or wrong in the special case, and thus, whilst we have the two standards interfering with each other in the judgments of even the most religious men, it is the doctrine of expediency that comes to the surface as the practical rule of conduct.

For our present purpose, however, all we have to observe is the intimate relation existing between these three subjects of human thought. I now desire to point out the origin of our ideas in relation to them, and to consider each of them separately in order to obtain some further illustrations which can be obtained by doing so—not forgetting, however, that as Ethics enter into both Religion and Politics, so it must be in the department of Ethics that our main demonstration must necessarily lie.

As regards then our notions of good and evil, it is well known that there are practically two ways in which such can be viewed. Either the standard of right and wrong is a matter of authority or it is a matter of ultimate Utility, defined as the greatest good of the greatest number. But however good these aspects may be as giving to us a logical theory of the sanction which lies behind systems of right and wrong, it is quite clear that in actual practice, upon the part of the great majority of the human race, neither theory quite fits in

with the facts of conduct. For, on the one hand, no one really weighs up probable consequences to the community as a whole in all their possible developments as the criterion of right and wrong in his action; nor is anyone on the other hand solely guided in his sentiments as to right and wrong by any authoritative standards, whether of religion or of law: these last do, no doubt, govern a great deal of the ground of his ethical decisions, but in few, if any cases, do they control the whole of them. For there is a vast area of action and behaviour in regard to which dogmatic authority has nothing to offer in the way of mandate, and it is nevertheless true that within this area the consideration of right and wrong still pervades the mind, and causes the conscientious man to think that he is acting rightly or otherwise, ignoring the fact that he is outside of the region of any positive code unless, indeed, in some cases it be that of the opinion of the society in which he moves.

All this is true of even the most reflective minds: it is still more true of the vast

majority of mankind. And it will be found that the real working law upon which mankind bases the rightfulness and wrongfulness of conduct is at bottom purely imitative. For if there is anything innate in such notions, it is clear that in so far as they are innate they are necessarily imitative of pre-existing ideas of a similar kind in either an ancestor or in the Creator. And in so far as they come into existence during life, the primary foundation must be laid by the teaching of parents or those who stand in that capacity; the infant and young child are taught that certain actions are wrong, and that others are right; and with the impressionable docility of early life, these ideas become indelibly fixed in their youthful minds; being really imitative presentations of these same ideas as conveyed by the parental authority. And so again, in later life, the teachings of the elders, and of religion, make further impressions, and the standard of right and wrong grows by a continuous process of accretion. But, coincidentally with the whole time, there is a further influence at work in

the example of those with whom the human being is brought into favourable contact. This begins even in the nursery, is very active during the school age, and is one of the most powerful influences in moulding character, and with it the standard of good and evil. The innate tendency to imitate is such that there is an unwritten code growing up with and at times interfering with the more positive code, and though this growth is most vigorous in early life, the process goes on continuously afterwards; thus, in the adult, we get a complex standard, which is partly the result of precept, but has been and continues to be further modified by example and associations. Thus if a child is brought up amongst those who violate the positive code of morals as known to him in any respect, just in so far as the relations of propinquity are pleasing to the child of those who violate the code, so will he too look upon the offences as venial or as no offences at all. Brought up amongst smugglers he will think it right and manly to smuggle. If amongst those who drink to

excess, he will view the positive crime of drunkenness, unless the reverse side of the medal happens by circumstance to be forced upon his notice, as a matter for mirth rather than for blame. If amongst poachers he will long for the time when he may share in the noble practice of stealing hares and pheasants, although he would scorn the idea of picking a pocket. And to pass, *per saltum*, to a more advanced period and more complicated relation of life, the youth or young man who has been so unfortunate as to learn his business or vocation in life, subject to the examples of those who practice evasion and chicane, will, if the general relations between him and them are complacent, come to look upon such things as practically right, because, as he will say, "others do them"; and it is due far more to this than to any conscious graduation in dishonesty that there is so much shady and really wrongful conduct practised in many departments of active life by some men whose theoretical moral code is of the strictest character. Even amongst the "gilded youth," who might

be supposed to be lifted by their position in life above the region of sordid considerations, there will be found those whose notions, acquired perhaps amongst the associations of the turf, will induce them to regard a gambling debt of so-called honour as of a higher degree of sanctity than an obligation due to a tradesman for a more legitimate liability. The inference from these data, which might obviously be much amplified, is then clear, and that is that the practical working idea of that which it is right to do or wrong to do is not the result of any reasoned theory of morals, but is an imitative process of the mind, originating with positive instruction at an age when the mind is still very plastic, and afterwards modified continually by a reflection of the current opinions of those with whom the human being is brought into contact, or by what may be termed, in fact, the complacent part of his environment. All this process of reflection is obviously imitative in its nature, and thus the process of Imitation is complete in its ethical sway under the combined in-

fluences of both primary instruction and subsequent modification.* If further evidence of a collateral kind to this effect is desired, it can obviously be produced abundantly from comparative Ethics, that is to say, from the comparative but largely varying standards of right and wrong which have existed at different times and among different nations. For actual illustration of this point I shall, however, for the sake of brevity, refer only to the history of the institution of slavery on the one hand, and that of the practice of duelling on the other; both of which exhibit in a very clear manner the comparative difference of standards referred to.

I take then the history of slavery first. Slavery is one of the most ancient of human institutions, and was in its origin in all probability a distinct step towards a higher degree of civilization in the human race. The more savage tribes have rarely kept slaves. They

* It is interesting in this connection to note that the well-known golden rule—"Do unto others as you would that they should do unto you," is obviously imitative in its method.

destroyed their captives, and in many cases it is to be feared added cannibalism to slaughter, and thus primeval slavery actually represented an amelioration in condition of both the conquerors and the vanquished. Moreover, the slave trade was probably the first form of the beginnings of that commerce which has been one chief civilizing agency in human affairs. But the cruelty of the incidents attending slavery were always, to our modern notions, very great, and yet mankind for many hundreds of years never thought there was anything wrong in the institution. Aristotle, the foremost representative of Grecian intellect in the palmy days of Greece, looked upon it as necessary and proper. Even Homer, although a great poet is always much in advance of the time in which he lives, whilst laying down in the *Odyssey* the maxim that—

Jove fixed it certain, that whatever day
Makes man a slave, takes half his worth away.

evidently did not regard the relation as being in itself a violation of right. Nor, indeed, has

slavery ever been explicitly condemned by any of the great religious systems of the world, certainly not, at any rate, by the Jewish, Christian, or Mohammedan, all of which recognised it, although some of the loftier precepts of Christianity would be construed in the present day as antagonistic to it in spirit. But as a matter of fact, slavery in almost its worst and most cruel form existed late on in the eighteenth century, and also in countries otherwise civilized during a considerable part of the present century. The horrors of the slave trade never reached a greater pitch than during those years in which slaves were still exported from Africa to the Brazils and to the United States: when the supply was kept up by natives on the dark continent by the burning of villages in order to capture helpless fugitives, who were afterwards packed beneath the hatches of trading vessels, and jettisoned like cargo if occasion arose. It was, indeed, the extreme cruelties attending the transport of slaves which first led the modern conscience to the idea that there was anything wrong in

slavery at all, and it was by a tardy and slow process, extending from 1792 to 1864, that one country after another completely rectified its standard of right and wrong upon this subject by abolishing first the trade, and subsequently the institution itself; so that now in all civilized countries slavery is regarded as one of the most heinous of crimes against our common humanity. No doubt there may have been at all times some, and in later times many, who objected to slavery in principle, but so far as the great bulk of mankind, and even the recognized teachers of mankind were concerned, the standard of right and wrong in this matter coincided with the positive legal code of the country in which they lived, and was indeed imitative in their minds of that which the law of the land permitted, and which was practised by the communities of which they formed part. I do not know that there is a more conspicuous illustration upon record of the varying standard of morality than that which is offered by the institution, now happily becoming obsolete, of human slavery.

The history of duelling is our second illustration, and, though narrower in its scope, it casts a side light upon comparative ethics which even the practice of slavery does not give. And this is due to the singular but incontestable fact that just as the sanction of slavery might be regarded as an inadequate view of Utility, and therefore essentially political, so that of duelling was originally religious. The duel was the natural successor of the old system of trial by combat, which in ruder days was regarded as a direct appeal to the justice of heaven. It was really also a comparatively modern practice; for such episodes as that of Menelaus and Paris in the third book of the *Iliad*, and of David and Goliath in Scripture, can hardly be regarded as of the nature of duels, but were rather instances of those single combats of which, upon the large scale, from the nature of the weapons used, ancient battle necessarily consisted. The judicial combat, of the preliminaries of which Shakespeare has preserved a picture in his play of Richard II, as between the son of "old John of Gaunt,

time-honoured Lancaster," and the Duke of Norfolk, was, of course, in accordance with the higher moral standard as then held, in its origin, and by a process of natural succession the duel of honour succeeded to it. And there can be no doubt that, to men with whom a certain chivalric sentiment was as the breath of their nostrils, a duel in maintenance of the fancied obligations of honour appeared to be the fulfilment of a duty. Although the law of England even down to 1817 actually sanctioned judicial combats in certain cases, the private duel was always contrary to the law: and those who hazarded their lives in this manner ran also the risk of being punished for murder. Yet, the influence of the opinion of society, and the inherited opinion of the day, though in opposition both to the plain precepts of religion, and to the common law as well, was such that men of the first rank, such as Fox, Pitt, Canning, O'Connell, and the Duke of Wellington, all in their time took their places in the duelling field. Sheridan was out twice, and perhaps we

have no finer illustration in English literature of the feeling of his day on the subject than is to be found in his admirable comedy of *The Rivals*, in which the obvious arguments against the personal expediency of duelling are placed only in the mouth of the meddlesome serving-man and mentor of Bob Acres.

I need hardly add that, whilst obsolete in England, duelling is still practised on the Continent: in Germany, as a military duty; in France with chivalric politeness and great frequency, but happily very rarely with serious consequences; and in both as a duty which men of honour owe to themselves and the society to which they belong. In our own country no indulgence would now, however, be shown by her Majesty's judges and juries, or by public opinion, to either principal or accessory in a duel. And here again, therefore, we have proof of that variability of the standards of right and wrong to which I have referred in illustration of the fact that, however philosophers may theorize, the real working

principle in this regard of human conduct is essentially imitative.

Let us now consider Religion shortly from a similar point of view to that from which we have regarded Ethics, remembering always that in dealing with Ethics we have already dealt with one of the positive aspects of religion, and need not therefore deal with that aspect any further. Religion in its highest sense has for its motive and essence the worship of a Superior Being, and the subject is so sacred that there is always a danger of hurting susceptibilities in referring to it at all. But as a matter of fact all we desire now to do in this review is to deal with religion in its lower and purely morphological aspect. And I have no hesitation in saying that, so far as this is concerned, religion in its special form and dogmatic faiths is necessarily, both as a matter of theory and actually as a matter of fact, thoroughly imitative. There are two broad facts which are sufficient in themselves to prove this. The first of these is that, historically, the special forms assumed by religion

have been almost purely a matter of race and descent. In the received classification of the older religions this is quite the fundamental fact, and even in the present experience of modern times, when freer intercourse and associations have done much to obliterate the old race lines, we still find that religious beliefs vary in the main according to the stock and origin of the peoples who hold these faiths, showing, as indeed we know, on *prima facie* grounds, that they are handed down from one generation to another by a traditional process which can only in substance be a continued imitation of ideas hallowed to the recipients by the assured faith of parents and ancestors. The other fact to which I referred, is correlative to the foregoing, and that is the small number of people who change their religious faith. Conversions do no doubt take place from one creed to another, but the number of such cases proportionately to those in which no such change takes place is very small, and they are simply of the nature of exceptions to the general rule; which is, undoubtedly, that

an overwhelmingly preponderating proportion of mankind live and die in the form of religion in which they have been brought up.

And now we have to deal with the distinctive proof of Imitation in Politics as the remaining item of our associated triad. Here again we have to remember that Politics are overlapped by Ethics, and that so far as this is the case we do not need to go over again ground which we have already traversed.

Political opinions are very much less stable than religious faiths, and one reason for this is to be found in the fact that new combinations in public affairs are continually being formed. So much so, indeed, is this the case that anything like a satisfactory analysis of political thought would occupy much time, and, indeed, as it happens, such a process is unnecessary for the further elucidation of the matter in hand. For it is all the more obvious as we regard the whirlpool of all sorts of opinions on a great variety of subjects which circle and tumble within the vortex of politics, that one chief fact only emerges as a permanent factor,

and that is the nature of the government and administration of public affairs. The origin of the word Politics, indeed, primarily relates to this conception. And it is evident, as a matter of both historical and present political morphology, that there are in principle only two real modes of Government, absolutism on the one hand, and government by party on the other. Of course in actual practice there are all sorts of more or less complete compromises between the two, but I do not know of any further permanent element.

Now Absolutism is a clear case of imitative method derived from remote antiquity, originating probably in patriarchal life, and consolidated by the requirements of military service. But its imitativeness is perhaps still more clearly evidenced by viewing its actual operation in our own days, in, say, a country like Russia. Why is it that nearly every Russian subject as he grows up submits with unquestioning docility to the autocracy of the Czar and the authority of those who administer affairs in his name? Because, of course,

he is taught to do so by his parents and tutors, and by all the administrative institutions of his country, until the idea of unquestioning obedience becomes engraved in his very nature. That there are some exceptions to this proves nothing, for they are exceptions only; and the same conditions are true, *mutatis mutandis*, of all despotically ruled countries, whether civilized or barbarous.

And where government by party comes in exactly the same proposition is true. I have never yet heard of a representative assembly in which there were no parties; and the completeness with which party programmes, or platforms as they are sometimes termed, sway the members of the party is notorious. For one original thinker who weighs and measures the planks of the party platform, there are scores who follow the crack of the party whip with complete obedience. And if this is true of representative chambers, constituted mainly of men of selected intelligence and ability, how much more is it true of the rank and file of the electorate itself. The political or party bias of

the voter was originally derived in an imitative fashion from some of his associations, perhaps from relatives, perhaps in his workshop, perhaps from the newspaper which came most easily to his hands. But once the party bias has been established, it is in the great bulk of cases never changed, and it is indeed of the very essence of that which the large majority of voters look upon as a primary obligation of party loyalty to vote "straight" as it is called, that is to say, in the way which the leaders of the party desire. The adage that in political life one should sink minor differences is almost an axiom, and we should be quite within the mark in saying that ninety per cent. of most electorates adhere steadily to their party, and march as if with something like organized discipline to record their votes in the ballot box. This is not because the great majority of them have reasoned out their views, but because they have become imbued with them by the working of Imitation, both conscious and unconscious, with the result that even the symbolism of a party color—blue, red, green, or

orange — is quite sufficient to lead a large number of voters to the polling station, and to determine the manner in which their marks upon the ballot paper shall be placed.

I claim therefore the right to summarize as a sound conclusion that, in these three important departments of human thought with which we have dealt, we find Imitation as the chief primary directive influence, remembering always that, so far as regards religion, we have dealt with the matter only from the lower and morphological point of view.

CHAPTER IV.

IMITATION IN LAW, CUSTOM, AND FASHION.

Relation of Law to Ethics, etc.—Authority and Obedience—

Both arise out of Imitation—Categories of Obedience—

The Papal Schism—Statute Law, Equity, and Common Law—Custom—Fashion.

THE relation of Law in the stricter sense of the term to Ethics, Religion, and Politics, is very intimate so far as the philosophy of Law is concerned. It is connected with Ethics in so far as it is coincident with considerations of natural right; with Religion in so far as the mandates of Religion carry weight with the community; and with Politics so far as it rests upon considerations of utility. But although all this is so, it cannot be said that positive law is created in any one of these ways; although they furnish severally to the human mind an explanation or justification of its

various mandates. The positive existence of Law is due mainly to authority, either that of the civil ruler or of some other body able to exercise authority. And to say that its existence is due to authority is really also equivalent to saying that it is due to the disposition of the majority of the persons affected by it to obey.

For authority rests upon and implies obedience, and no amount of authority will in the long run be able to obtain the operation and existence of a positive law unless the communities affected are, in general, willing to be guided by it. A fair example of this fact is afforded by what is sometimes termed church law. So far as this consists of customs recognised by common or civil law, it is enforced by the civil courts in this country. But in this respect it stands upon no other footing than that which is accorded to recognised customs of all kinds, and the authority herein is, therefore, that of the state only. In so far, on the other hand, as church law is a body of law lying *outside* of the law of the state, it is of the

nature of canon law, and as such is of no general authority whatever, except to those who specially accord to it their *obedience*, as is done largely in this country in their different communions by the clergy.

So, again, with what is termed international law, which would not be law at all in any accurate sense of the term were it not for the fact that as a body of recognised usages it acquires the *status* of law, solely through the disposition of civilized nations to yield obedience to its mandates ; and this in the absence of any personified enforcing authority whatever. So soon as nations or some considerable number of them break through international law at any point, it becomes apparent that the usage affected is no longer "law" in any positive sense of the term, and this *because* a sufficient amount of *obedience* ceases to be rendered to it. The same is true also even of the most definite form of positive law, the law of the state ; for this also, if neglected and not carried out in any particular, may remain, indeed, upon the statute book, but ceases to

have any deference paid to it, and falls into neglect and desuetude.

We are thus entitled to say that the foundation of positive law rests upon Authority on the one hand, and Obedience on the other. I have no doubt that in the final analysis it would be found that obedience is really the primitive fundamental element, as would appear from the illustrations just given, and authority a derived function only. But it is not necessary for our purpose at present to enquire further into this point, as we have simply to ascertain how Authority and Obedience are related to Imitation without assessing further the relation between the two.

We see at once, then, that Authority in the abstract necessarily implies Imitation, both on the part of the authority, and on the part of those who recognise it, inasmuch as every authority, from the necessity of the case, acts in virtually the same manner in procedure as the authority to which it succeeds. The sovereign imitates his predecessor; the judge follows out a ceremonial, presumably copied

from that of the monarch; the representative assembly adheres to the precedents of former assemblies. I do not say that there are never any deviations in procedure, for this would be absurd; but in the main the course and form of the assumption and practice of authority are thoroughly imitative. It asserts always its paramount right, and it commands always the obedience which it claims as its due.

The recognition of authority follows clearly upon the same lines as those of its assertion. The authority which comes forward in the semblance of its predecessor receives a similar deference, and the first instinct of the traditional obedience of the community is to admit the right claimed with little or no question. It is true that obedience in its larger aspect will not in the long run be accorded to every imposter who may masquerade in the chair of state; but the first provisional impulse is, undoubtedly, to defer in the outset to the authority claimed so long as precedent has been complied with.

I think we may recur here with advantage

to a well-known historical incident which illustrates this, and it is taken from a department of affairs which is peculiarly suitable for our purpose, as the element of sanction or punishment is almost eliminated from it. In the year 1378, the conclave of cardinals unanimously elected Urban VI as pope, but, becoming dissatisfied with their choice, for reasons into which it is not necessary to enter, a large number of the cardinals withdrew, and elected another pope, Clement VII. For thirty-eight years the Roman Catholic world had thus two claimants to the popedom. This is known as the great schism, and within certain large areas and communities the one pope was recognized, and in others the other pope. Now as a matter of legal ecclesiastical theory there could not possibly at any one time be more than one pope. But the mere fact of each of the *soi-disant* popes complying with the precedents and the customary procedure of the papal office secured for each of them a large body of followers: and the Roman Catholic world of the day became divided into what

were known as the obedience of the pope at Rome, and the obedience of the pope at Avignon. England, Italy, and Germany, for example, adhering to the former; France, Spain, and Scotland to the latter. The deadlock was only got rid of after many complications by finally electing another ecclesiastic to occupy the chair of Saint Peter. Now here we have a clear illustration of the fact that Authority rests in the last resort upon Obedience,* and that obedience in the first instance is rendered to the authority in respect of its imitation of an authority previously recognised.

Let us consider then, finally, the nature of Obedience itself as related to Imitation. Obedience naturally resolves itself into two categories, by much the more important one of which is the tendency of human beings to act

* It will probably interest the reader to remember that a relation of this kind is indicated by Saint Paul, who, by the way, has more to say about "obedience" than all of the other New Testament writers put together. The passage to which I particularly refer runs as follows:—"Know ye not, that to whom ye yield yourselves servants to obey, his servants ye are to whom ye obey."—*Romans*, vi, 16.

in the same way as the general behaviour of those with whom they associate suggests to them. The natural instinct is to do as others do, and to avoid what others avoid. And obedience in this view of it resolves itself clearly into a pure process of Imitation. The other remaining category of Obedience is rather more complex, and comprehends all those cases in which the persons affected obey mandates addressed to themselves by an authority to which they defer, but in respect of which they have no general example of others to follow or be guided by. The unquestioning obedience which the soldier renders to his commanding officer may be taken as an illustration. And here and in parallel cases the obedience is not so much the following of an example as it is the result of a habit of obedience acquired by discipline. But then, as we know very well, this disciplined habit is itself an imitative function. It is the generalized result of many detailed acts, different in kind, but all agreeing in the one characteristic that they were acts done in compliance with

the will of the commander. They are in gross, therefore, the following out of a line of conduct, the example of which exists in the will and training of the disciplinarian, and are, therefore, imitative in their character and origin.

It is to be noted, however, that very few, indeed, of such cases as are included in the second category of Obedience are to be looked upon as being cases of obedience in compliance with "law," for law refers only in strictness to mandates of a general cogency, and not to those of a specially personal character. So that, though in an analysis of Obedience it was necessary to refer to cases of this kind in order to exhaust the subject, the importance of the second category relatively to "law" is very small. It is in this respect confined almost entirely to new statutes, and to the operation of such upon the minds of citizens at first hand; that is to say, before they can individually have the example of other citizens to guide them. In cases of this kind an orderly citizen will not wait to

see how others act when a new law comes into force and becomes known to him. But he obeys because it is his *habit* to obey other ordinances coming from the same sovereign authority. And thus in these rare cases, in which the example of others has not had the opportunity of influencing conduct, it is still an imitative process, *i.e.*, the *habit* of general obedience to the sovereign which induces the special obedience to the new statute.

So that if our analysis is correct, all Obedience rests upon Imitation, as also does all Authority. And as these two elements are the only ones concerned in the genesis of positive law, so also does it follow that all positive law rests upon Imitation as its foundation.

It is possible, perhaps, to make this proposition clearer by looking at positive law in its concrete form. Jurists tell us that in this country Law may be discriminated into three categories: Statute Law, Equity, and Common Law. Now a Statute Law is clearly an imitative presentment of the line of conduct

designed by the framers of the statute, so far as it applies. And compliance with the statute, that is to say, the obedience rendered to it, is to that extent imitative of the mode of conduct which it affirmatively and negatively requires. We muzzle our dogs because we are told to do so under the provision of a statute, and thereby follow the conduct which the statute requires of us in this matter; and the statute itself derives its immediate existence from the will of the sovereign power which "materializes" imitatively an *à priori* conception within the design of that power.

Equity again, as we learn from jurists, is the application to legal decisions of certain maxims and equitable considerations which are necessarily of a derivative and, therefore, of a traditional and imitative character. And when we come to the Common Law, we know very well that this monumental entity absolutely professes to be founded upon usage and past decisions, and that as far as may be, it is, therefore, imitative in the purest and most uncompromising fashion. It is here, by the

way, that we reach the boundary line which exists between the first two subjects to which this chapter is devoted.

Although Common Law rests upon custom, it does not of course embrace in its purview anything approaching the whole number of customs. Primogeniture in most parts of England is a part of the common law, though absolutely founded upon custom. But very many of the observances of life are just as truly customary, though not enforced by civil law in any way whatever. The field covered by these observances is far too wide to be dealt with in detail, and I can only refer the reader to works such as those of Sir Henry Maine and Sir John Lubbock upon kindred subjects, if he wishes to commence an exhaustive study of the customs of mankind. It is quite sufficient for the illustration of our argument to cite a few of the most familiar cases which come under the notice of everyone. There are, for example, the marriage customs of communities. The contract of marriage itself is, of

course, a matter of positive law, but I need hardly say that the various details which lead Hindoo parents to half ruin themselves, and which in our own country are the subject of so much pleasing ceremonial, are regulated by social customs which vary a little in particular circles of the community, but are everywhere practically the same. The more mysterious observances of what is called etiquette are also of this character; and by this I do not mean only those which are termed by the experts of ladies' newspapers as "the manners of good society," and the observances of professional gentlemen towards each other,—which last do not necessarily fall within that description,—but many other categories of observance also, ranging from those involved in a presentation at court down to the street salutations of casual acquaintances. Other gruesome forms of custom are those relating to death and interment. This is too sad a subject to dwell upon, but the ghastly paraphernalia of waving plumes which many of us remember, the white weepers which it was customary in some parts

of Scotland to attach to the cuffs of the coats of male mourners, and also the modified ceremonials of the more up-to-date funeral, have all been regulated and evolved by custom. That all such customs, and, indeed, all customs are imitative, is so obvious a proposition, that it requires little further illustration. It may, however, be pointed out in conclusion that, to describe the customs of a nation in a thorough manner is to indicate its place in the family of mankind, a fact which furnishes material corroboration of the foregoing statement.

Upon the slighter and more frivolous boundary of custom we enter upon the domain of Fashion, a term which is generally used in a limited sense and with special application to dress and social functions of the lighter kind. That everything relating to these matters is founded upon Imitation I do not think any one would be bold enough to dispute. A person who attempted to be wholly original in dress and in ordinary social life would certainly not endure very long the ordeal to which he would be exposed, and would per-

haps find himself doing homage to custom as enforced by myrmidons of the law attired in suits of customary blue, and have to engage for his defence the services of a gentleman wearing a customary wig before any great length of time had elapsed.

We may therefore fairly claim that Imitation is the real groundwork of Fashion, as well as of the weightier things implied by Custom and Law. It is important to note also that the three subjects to which this chapter relates *shade* into each other upon their boundary lines; and that what may fairly be termed the *generating function* is, therefore, the same. In further proof of this point it is only necessary to remember that there are some practices which have been sometimes of the nature of law, and at other times of the nature of custom; and, again, that there are other practices which cross in the same way the boundary line between custom and fashion, of which the very widely spread practice, among less civilized communities, of tattooing, may be taken as a fair illustration.

CHAPTER V.

IMITATION IN LANGUAGE, POETRY, AND THE FINE ARTS.

Origin of Language—Imitation of natural sounds—Picture writing—Imitateness of poetic form—Of poetic matter—Imitateness of painting, sculpture, and the drama—Of music—Of architecture.

LANGUAGE in some of its aspects is one of the most remarkable instances of the influence of Imitation which it is possible to bring forward, and a treatise of this nature would be very incomplete if no further reference was made to this circumstance than the brief allusions to it in our earlier chapters: but although too much importance cannot be assigned to Language in this regard, the fact referred to is so obvious, that it precludes the necessity of anything like a lengthy dissertation upon the point.

It is a moot question how human language originated at all. Blair, indeed, in one of his

admirable lectures upon Rhetoric and Belles Lettres* tells us that "those exclamations * * which by grammarians are called interjections, uttered in a strong and passionate manner, were, beyond doubt, the first elements or beginnings of speech:" and he then points out that when names began to be assigned to objects, these names were obtained in the first instance by men "imitating, as much as they could, the nature of the object which they named, by the sound of the name which they gave to it." "We can conceive," he proceeds, "no motive which would more generally operate upon men in their first efforts towards language, than a desire to paint, by speech, the objects which they named, in a manner more or less complete, according as the vocal organs had it in their power to effect this imitation." Blair gives the following illustrations: "A certain bird is termed the cuckoo, from the sound which it emits. When one sort of wind is said to *whistle*, and another to *roar*; when a serpent is said to *hiss*, a fly to *buz*, and falling timber

* Blair's *Lectures*, Lecture vi, 1823.

to *crash*; when a stream is said to *flow*, and hail to *rattle*; the analogy between the word and the thing signified is plainly discernible."

Another well-known writer on the origin of language* tells us that there have been three main theories—" (1) That language was innate and organic; (2) That language was the result partly of imitation and partly of convention; (3) That language was revealed." But it is not necessary for our purpose to discuss these alternative propositions in any way further than to remark that the "imitation" spoken of, so far as allowed by Farrar to be correct in theory, is in the sense that man produced a large or very large proportion of his vocabulary by an imitation of natural sounds. This is obviously in accord with Blair's opinion just cited. And if this sort of imitation was an original source of language, it furnishes quite a sufficient starting point for our present argument: for such a process falls clearly within our definition of Imitation, just as it is also referred to as imitation by the authors named.

* *Origin of Language*; Farrar; 1860.

And it will generally be agreed that from some such original source language has become gradually evolved, and afterwards developed by a further process which can only have been imitative in its nature.

The proof of this lies in the life history of the individual. Every one living has clearly learned the form of language which he habitually uses, English, French, or the like, through hearing it used by others. From his earliest days in the nursery he has been picking up words and phrases: and nothing can be more self-evident than that the words he uses, and to a large extent his manner of pronouncing them also, are derived by way of Imitation, principally of the unconscious kind, of those with whom he has been associated in life. There are said to be over one thousand different varieties of human language in the world, and of these the boy or the man talks familiarly *one*, and that one is, as it is fitly termed, his mother-tongue. If any person can possibly be sceptical as to the imitativeness of language, and desires in his mature years to have some

evidence of this fact, all he needs to do is to try to learn a foreign language new to him. If he ever wishes to be able to talk that language, there is only one way in which he can acquire the power of doing so, and that is by associating, habitually, with one or more persons who can talk it already: and in a surprisingly short time he will learn to talk and understand that language to the extent of the vocabulary with which his new experiences make him familiar. This would be a case of somewhat *conscious* Imitation, but that Imitation in language, in some of its forms, is quite *unconscious*, becomes evident if we consider the phenomena of what is loosely termed local accent or provincialism. The resident in any part of a country where there is a well-marked peculiarity of intonation tends always to acquire that local intonation, and has only to remain there long enough and in the great majority of cases he will acquire it. He lives in New England and he acquires the peculiar so-called Yankee twang: he takes up his permanent residence in an Irish district racy with the brogue, and the brogue instils

itself into his speech : he comes only now and then from the West of Scotland, and he brings with him broad vowels and a tendency to curl the letter *r*, whereas, if he had spent the same amount of time in the London district, the letter *r* would have faded away almost entirely. But the broad fact that every one possesses in the main the mother-tongue of the country or district where he was brought up, is in itself sufficient evidence of the operation of Imitation in the case of spoken language. For language is certainly not born with a child, and as certainly the child talks before he has given it any formal study.

Written and printed language—the language of marks and signs—is also an obvious exemplification of Imitation. Those who have studied philology tell us that the earliest form of record was of the nature of drawings or imitations of natural objects. Blair tells us, in the following lecture to that to which I have already referred, that “Pictures were, undoubtedly, the first essay towards writing. Imitation is so natural to man, that, in all

ages, and among all nations, some methods have obtained, of copying or tracing the likeness of sensible objects. Those methods would soon be employed by men for giving some imperfect information to others, at a distance, of what had happened; or, for preserving the memory of facts which they sought to record." Picture writing has, indeed, amongst some tribes, survived almost to the present day. But even if this were not so, the history of the human individual again proves our case. No one can learn to write except by a well-known process of Imitation of the most conscious order: no one learns to read except by recognizing symbols, which can only be recognized because they are imitative of other symbols.

Nor does the imitation of Language stop in these elementary aspects of it to which we have already referred. Poetry, which has always been esteemed the most exalted sort of language, is usually strongly mimetic in its character. Not only is this so in its verbal structure, but also in the signification of the

words used. By its verbal structure I mean its conformity to rhythmic conditions, whether of feet or of rhyme; in all poetry these conditions must be present, quite apart from the sense or meaning; and it is clear that all forms of rhythm and of rhyme are necessarily imitative, and that it is the imitative repetition, when not too slavish, which pleases the ear and gives to the verbiage one of the charms of poetical language.

So far as the sense and meaning of the words used is concerned, we find again the same imitative genius in poetry in the frequent use of metaphors, similes, and imagery. When Scott says of a defeated army—

They melted from the field as snow,
When streams are swoln and south winds blow,
Dissolves in silent dew.*

a mental picture is created by his metaphors which is necessarily an imitative presentation of natural phenomena. It will be granted that poetry without imagery would not be true poetry at all, and as all imagery must be

* *Marmion*, Canto sixth, xxxiv.

imitative of the things imaged, it is clear that here, in the chief beauty of poetry, we find Imitation enshrined as its necessary constituent.

There is still another form of Imitation in poetry to which I must refer, though I do not attach so much importance to it as to the last phase of its action. Pope, in a well-known passage* tells us:—

'Tis not enough no harshness gives offence;
The sound must seem an echo to the sense,
Soft is the strain when Zephyr gently blows,
And the smooth stream in smoother numbers flows;
But when loud surges lash the sounding shore,
The hoarse, rough verse should like the torrent roar.
When Ajax strives some rock's vast weight to throw,
The line too labours, and the words move slow:
Not so when swift Camilla scours the plain,
Flies o'er th' unbending corn, and skims along the
main.

and though any formal adherence to this rule would, perhaps, convey to a fastidious mind a sense of artificiality which ought never to be caused by good poetry, still, in substance, I

* *Essay on Criticism*, part 2.

believe, that Pope is right. The true poet accomplishes this end by a sort of instinct. One of the finest examples in our language is that conveyed by the contrast between the *L'Allegro* and the *Il Penseroso* of Milton, with both of which, of course, every one is familiar. Amongst modern poets I find that Tennyson is largely credited with the same beauty of language, and Farrar, in the work I have referred to, quotes the following passage as an instance of this. The poet describes the leap of a cataract thus:—

Where the river sloped
To plunge in cataract, shattering on black blocks
Its breadth of thunder;

It would not be consistent with the object of this treatise to go further into this field of Imitation in poetry: I feel bound, however, to refer in conclusion to the fact that Aristotle in his *Poetic* has a great deal to say on the general subject of the imitative character of poetry. He tells us in the first chapter, *inter alia*, that “the *epopee* * * and tragic poetry, and moreover comedy, and dithyrambic poetry,

and the greatest part of the art pertaining to the flute and the lyre, are all entirely imitations.*" And his first three chapters are mainly occupied with discussing this imitation. But our own illustrative purpose has been sufficiently accomplished without commenting further upon Imitation in poetry, and it only remains to be said that just as poetry is one of the fine arts, so also do we find this element of Imitation entering as truly into the fine arts generally as it does into poetry itself.

That painting, sculpture, and the drama are imitative arts, that they rest upon a generalised and selected Imitation of the beautiful, pathetic, and remarkable, in their various forms, is however so obvious a truth that little effort is needed to bring home the conviction to every reflective mind that here at least Imitation reigns supreme. It is true that in all these forms of art there is a tendency to idealize. But if we consider that idealization is only a process by which artists leave out that which is distasteful, and develop more

* Buckley's Translation, Bohn's Series, p. 407.

highly that which approximates itself to our sense of beauty or completeness, we shall see that by idealizing they are still only copying mental standards which in themselves must have been derived from observation in some way or shape. So soon, indeed, as they begin to deviate by idealizing from verisimilitude, the effect will also *begin* to grow grotesque to a severe taste: as, for example, where we find impossible wings placed in impracticable positions upon the personalities portrayed. It is true that anything may be still artistic although grotesque, but it is equally true that the further the artist gets away from *truthfulness* in *some* aspect or another, the more he is abandoning the highest excellence of his work.

Architecture and music are also looked upon as fine arts, and the claim of music to rank as such cannot be questioned. It is true also of music that some part of its charm rests upon Imitation. There is, as we know, a sense in which this term has been specially applied to music, *i.e.*, "the process or act of repeating a melodic phrase or theme, either at a different

pitch or key from the original, or in a different voice-part, or with some rhythmic or intervallic modification not so great as to destroy the resemblance.*" But that music is often imitative in a more general, though less definite sense, none of its votaries would deny. The sounds of the natural world, the incidents of battle, and other things also are imitated, not obscurely in some musical compositions: and over and above this there is in music a suggestiveness which, though difficult and perhaps impossible to define, is still of the nature of an Imitation coming from the mind of the composer. The actual rendering of compositions once learned is, of course, a pure case of imitative method.

Architecture is usually considered as one of the fine arts, and as the world grows older, it becomes increasingly imitative in its methods. The original motive of architecture must have been to satisfy the requirements of humanity for shelter; and its æsthetic aspect must almost certainly have been of later origin than

* *Century Dictionary.*

that which was purely utilitarian. In its utilitarian phase this art must always have been imitative; and even in its nobler efforts the same element appears. Not only is it supposed that the idea of the column or pillar was derived from the trees of the forest, but the ornamentation which is a feature in many styles of architecture must also have had an imitative origin. And thus, in common with all the other fine arts, I regard architecture as furnishing further evidence of that innate tendency to imitate which plays so large a part in the conduct of mankind.

CHAPTER VI.

IMITATION IN HABIT AND INSTINCT; AND IN ANIMAL
AND VEGETABLE LIFE.

Genesis of Habit—Repetition—Repetition an Imitation of
self—Instinct—Inherited Habit—Views of Wallace,
Romanes, and Lloyd Morgan, with regard to Imitation—
Imitation in Animal life—in Vegetable life.

THERE is no other influence the action of which upon human behaviour is so universally recognised as that of Habit. The word has several accepted meanings, being applied to clothing and also to physique, but the principal use of it undoubtedly relates to the familiar fact that human beings acquire a tendency to act in a particular way almost automatically, from the mere repetition of what were originally acts of full consciousness and volition. Even the most trifling details of existence, as well as some of the more important, become largely controlled by habit; the hour at which

we rise in the morning; the times at which we take our meals; the manner in which our daily time is distributed, whether in business or pleasure; all become so influenced. Habitual functions such as these are essentially periodic, that is to say, they tend to recur at approximately regular intervals of time, and whilst some of them may be regarded as almost vital and necessary, Habit, as such, does not recognize much distinction between those acts which are advantageous to the human being, and those which are injurious in their consequences. Of these last, for example, the craving arising out of intemperate habits is a sufficient illustration; and thus, indeed, the statement that man is a bundle of habits becomes a formidable truth, which meets with much exemplification from the experience of everyone.

The genesis of Habit is simple. It arises out of an innate tendency, more especially conspicuous in the young, who are always overflowing with superfluous activity, to repeat an action if its first result has not been unsatis-

factory; and from the further tendency which is engendered by frequent repetition for that act to become easy and even necessary. By a sufficient amount of repetition it ultimately becomes a confirmed habit, and becomes almost built into the very constitution itself of the individual. And we have in habits of this order an excellent illustration of the two-fold way in which the phenomena of human action can be viewed. In consciousness we each of us are aware of the individual voluntary acts by which habits are set up, and we are conscious when they are fully acquired of the desire or craving which arises when the periodic time arrives at which the self-created requirement asks for satisfaction. And in direct correspondence to this recurring *series* in consciousness, there is in some cases a physical adjustment which has been set up in the material which constitutes the bodily framework.

There are in addition to these, which are always regarded as habits, a number of other habitual forms of human activity to the origin

of which the term "Habit" is not usually applied, but which, nevertheless, are of the same nature as the better recognized conscious habits, though in them the conscious foundation has been so completely obliterated by frequent use that we have come to look upon them as reflex actions. That some of them are true habits, however, becomes evident if we examine them by a method of series or gradual approach. Consider, for example, with this object, the locomotive activities of a human being, and let the series be represented by walking, swimming, and some other movement of an artificial character, as, say, skating. In all of these alike there is a wonderful co-ordination of nervous and muscular effort, which in the expert has reached the status of practical unconsciousness. But in skating, to take first the most artificial item of our series, we know very well that the form of activity and the necessary co-ordinations are acquired very consciously, for they are dependent upon highly artificial conditions, and everyone who has practised it can remember the time when he

was less proficient in the exercise, and is aware that it has been by frequent practice, that is to say, by repetition of effort, that he ultimately acquired the natural and easy poise which enables him to conduct those complex evolutions which it gives him so much pleasure to engage in. In the case of swimming, however, the circumstances are simpler than in those of skating, for here there is no artificial condition necessary, and yet here also it is only by repeated and well-recollected effort that anyone acquires the muscular and nervous co-ordination that enables him to become a swimmer. And now, as I particularly wish to observe, the same fact is true of walking, the first item of the series, that is to say, this art also is acquired by practice and repetition, but in this case the lesson has been learned so early in the life of each individual that no one ever remembers having learned, as he nevertheless did, by repeated efforts to toddle across a room. The fact thus becomes clear that some processes which, like walking, appear to be practically reflex and automatic even early in life,

are really cases of Habit built up by repetition.

Before we go further, let me point to the conclusion already deducible from the consideration of these few forms of habit to which we have referred. They are all due, as habits, to repetition. But what is repetition? It is the doing again that which the human being has done before; that is to say, it is, in the large sense which I connect with the word, due to a process of Imitation of self in previous actions, and thus Habit in its processes is an exemplification of Imitation in one of its clearest aspects. This is true of the human unit itself; it is also true of the physical components of which his body is made up; for when nervous and muscular tissue are consumed by exertion, so also are they replaced by new matter specially charged with an imitative resemblance to that which has already done its work and passed away in the perpetual round of nature's activities; the resemblance being a definite inference from the fact that the new tissue comes into existence to do

precisely the same kind of work as was done by that which it replaces.

There are, of course, very many habits to which I have not referred, and there are also bodily functions which may, on evolutionary grounds, be regarded as survivals of anciently formed habits of organisms very far distant in that long line of descent which leads from protozoic life to the status of humanity. Such is the process by which food and food products pass through the body ; commencing with the conscious acts by which food is placed in the mouth and masticated ; followed by the act of swallowing, which becomes automatic only when the food has reached a certain position at the back of the tongue ; and followed further by the peristaltic action which takes place in the alimentary and other receptacles, and by which it is passed on continually until absorbed or eliminated. There is the breathing, which is still partly under the control of the will, but which at a certain stage of necessity, escapes from that control. But it is not necessary for me to enter into further

detail with regard either to unquestionable habits, or processes analogous to them. The broad fact to which I wish to draw attention is that just as the life-history of a human being is of the nature of a series varying from term to term, so also many of the processes, both mental and physical, of which that life is the integrated total, are of the nature of series also, auxiliary to the main series of the life-history of the individual, and related to each other by consequence both directly and indirectly.

All these processes partake obviously of the nature of Habit, and as Habit is built up by Imitation of self, we see at once how important is the bearing of that principle upon human behaviour in a way quite outside of those other matters in which I have previously traced its influence.

I now take Instinct as a further example of the action of Imitation. And *here* it is evident that we at once take leave of the purely human standpoint which we have hitherto adopted in discussing the operation of Imitation. Human beings have indeed no monopoly of Habit

itself, but, so far as Instinct is concerned, they have not only no monopoly, but they have, in fact, to use a common expression, to take a back seat, the instincts of the lower creation far surpassing those of man in relative volume and keenness.

The general position of naturalists with regard to Instinct is that it is congenital, and that it in this respect contrasts with Habit, which they regard as acquired by the individual. But it is also held by eminent writers, among whom are Darwin, Wallace, and Romanes, that *some* habits are inherited. Now it is quite clear that if some habits are inherited, this is only another way of saying that such habits are congenital; and so far as they are concerned, the distinction between them and Instinct disappears, for I do not see how any distinction can be maintained between an Instinct and a congenital Habit. Romanes, moreover, goes further, and defines Instinct as reflex action, into which there is imported the element of consciousness,* and as the

* *Mental Evolution in Animals*, p. 159.

perfected effect of Habit is ultimately to establish just this exact condition of reflex action accompanied with the element of consciousness, the identity of inherited Habit with Instinct is upon his theory surely evident. It is true that Romanes discriminates instincts into two categories; those which originate, like incubation, under the law of natural selection; and those which are set up by the effects of Habit in successive generations; but to my mind both of these are reducible to inherited Habit; avowedly so in the one category, and clearly also by inference in the other; the only difference being that in the case of natural selection only having been at work, the habit *may* have been unconscious in its origin; but whether the origin of the habit is conscious or not, its inheritance is still the foundation of the instinct.

It must be admitted, however, that Romanes does not express the unanimous opinion of naturalists on the inheritance of habits. Weismann does not, under his theory of Heredity, admit it; but a recent writer, Pro-

fessor Lloyd Morgan, who, I think, agrees with Weismann generally in his views, nevertheless speaks of acquired habits being transmitted through *tradition* like, as he says, so many of the social customs of mankind. It is true that there is a distinction here between tradition and inheritance so far as habits are concerned ; but for my purpose this is not material. Tradition itself is evidently a case of Imitation. So that when summarized our argument runs thus. All habits arise out of Imitation of self ; that is to say, out of repetition ; instincts are resultants of inherited habits ; and therefore instincts are the result of Imitation ; and, moreover, in so far as we substitute the idea of tradition for that of inherited habit, this also is an obvious case of Imitation in the large sense in which I use the term. So that all the phenomena of Instinct, as well as of Tradition, are incidents arising from the same general process of Imitation, just as we have seen is the case with Habit itself.

I do not see how it is possible to escape from the conclusion just stated, but my dis-

sertation would not be as complete as it can be made if I did not point also to the corroboration which these views receive from the expressed views of some great naturalists on the subject of Imitation in their own senses of the term.

First I take Wallace. He frequently refers to imitation in his *Theory of Natural Selection*, and it is to be noticed that in his use of the word he does not at all restrict himself to *conscious* imitation, but uses it frequently in cases where any conscious element of copying cannot be supposed to exist. Thus he tells us, *inter alia*, of Lepidoptera "imitating" other species; that certain Coleoptera or beetles "imitate" other Coleoptera; that some moths and beetles "imitate" other insects, and that insects of other orders "mimic" beetles. He deals with the facts of mimicry in most interesting detail, and dwells upon the general harmony in nature between the colours and markings of animals and those of their habitations. And he distinctly comes to the conclusion "that the peculiar notes of birds are

acquired by imitation, as surely as a child learns English or French, not by instinct, but by hearing the language spoken by its parents."

Romanes formulates the influence of imitation very distinctly. With him it is on the whole a conscious process, but he assigns very great importance to it as being "a mode whereby intelligence may change or deflect an instinct." He points out that some birds are able to imitate songs having a proper musical notation, and observes that a child begins to imitate very early in life, and that the faculty goes on developing during the first year or eighteen months; and concludes generally "that the faculty of imitation is one very characteristic of a certain area of mental evolution, and therefore that within the limits of this area it must conduce in no small degree to the formation of instinct."*

Professor Lloyd Morgan goes still further in the importance he assigns to imitation; but with him the use of the word is limited to the

* *Mental Evolution in Animals*, p. 225.

more conscious varieties of the function, and under these heads he assigns very great importance to it. I may fairly indicate his view of the matter in his own words:—"That imitation, or what we are accustomed to regard as such, is an important factor in animal life, especially among gregarious animals, is scarcely open to question. But the biological and psychological conditions are not easy to understand. Some forms of imitation are often spoken of as instinctive; but some are voluntary and under the guidance of intelligence. * * * And the exact nature of the connection between this conscious and voluntary imitation and the involuntary instinctive process to which we apply the same term, requires careful consideration."*

The fact that men so well able to judge have recognized the importance of Imitation in a more limited sense of the term is a very material corroboration of the theory I have ventured to put forward. It is true that the term Imitation is used by these naturalists in

* *Habit and Instinct*, p. 166.

more limited senses than I have assigned to it; but although the senses are more limited, they do not fail to be included in my own idea, and thus all that they say of Imitation becomes relevant to the suggested general principle, for although not the whole it is part of the truth. The only difference is that the factor which they consider to be of great importance becomes amplified in my view, and is thus invested with a still more extensive sway.

I have in this chapter referred to Instinct as due to Imitation, and have thus relinquished the more purely human phase of the process in order to take in an aspect of it which concerns the whole of the animal world as well. And it is only right, therefore, before leaving this branch of the subject altogether, to remark that further evidence of Imitation is abundant in many of these other forms of life with which our world is peopled. In our domestic animals and pets we have instances of this. The jackdaw has a well-known reputation in this regard, but the mimicry of the parrot is to

most of us a more familiar case. Some parrots imitate all sorts of sounds remarkably well, and imitate certain forms of action also. My own latest possession of that kind, after being speechless for some weeks (it was then a young bird), commenced suddenly to mew like a cat, and from that time forward developed a considerable vocabulary, besides imitating canaries, dogs, poultry, and some natural sounds. It would also sway its body to and fro in appreciation of the rhythmic effect of singing, and would bow its head in imitation of action of that kind on the part of its human friend. Dogs, of course, can be taught to do a great variety of things, and many of these, such as driving and collecting sheep, must be learned by Imitation. But the same is true in their measure of all domesticated animals, and amongst those which are rarely domesticated, the mimicry of the monkey tribe is proverbial. Without, therefore, venturing further upon a field which is far too wide to be dealt with by myself, it may be granted that, apart from its illustration in Instinct, there is a vast amount

of conscious Imitation also to be observed in the behaviour of the lower animal world.

That the principle of Imitation holds good also in the vegetable kingdom, from which the whole existing protoplasmic matter of animal life is derived, is equally demonstrable, for it is, I think, clear that the resemblance in life history between plants and their predecessors is quite absolute, except so far as modified by change of environment. And this is corroborated indirectly by the circumstance that changes in the environment make always definite and, so to speak, measurable changes in the vegetable, testifying thus indirectly to the invariability of the primary directive influence itself. Thus we know that by those changed and specialized conditions of environment which we call cultivation, we can vary vegetable growths at will within certain limits. "Many alterations," remarks Dr. Balfour, "in form, size, number, and adhesion of parts are due to the art of the horticulturist. The changes in the colour and forms of flowers thus produced are endless. In the

Dahlia the florets are rendered quilled, and are made to assume many glowing colours. In Pelargonium the flowers have been rendered larger and more showy; and such is also the case with the Ranunculus, the Auricula, and the Carnation.*" Wallace, too, refers to the same truth, pointing out that in turnips, radishes, potatoes, and carrots, the root or tuber varies in size, colour, form, and flavour, * * * in the cabbage and lettuce, the foliage * * * in the cauliflower and brocoli, the flower heads * * * in the garden pea, the pod * * * in apples, pears, gooseberries, and currants, the fruit †; and that these forms of variation may be accumulated by selection. A further point that I desire to note is that these produced variations are perpetuated for so long a time as the necessary conditions are maintained, this being in itself an additional proof of the working of Imitation, which, under suitable conditions, thus preserves and imitates variations. As bearing

* *Encyclopædia Britannica* : article, Botany.

† *Theory of Natural Selection*, pp. 287, 288.

upon natural selection this consideration is material, for it serves to show the connection of Imitation with that law. Instead of the advantageous variations which form the subjects of natural selection being fortuitous and accidental, and selected from variations spreading in *all* directions, the teaching of our theory is that variations are not fortuitous at all, but are confined within the limits of near propinquities, some of them different from, but always including those of descent.

It is well to consider, in connection with the variations in vegetable life above referred to, the phenomena connected with the process of *grafting*, and the analogous process of *budding*. In both of these a part of one plant or tree is joined to the stock of another plant or tree, dissimilar in some respects to that from which the part to be so joined is taken. The result is, when the act is successfully performed, to produce fruits or flowers, as the case may be, which differ somewhat from those of both originals, and at the same time resemble those of both in certain respects.

The process of budding referred to is usually practised with roses and some fruits; but the cases which I will more particularly consider are those of grafting, which is perhaps better known to most of us than the exactly analogous cases of budding. Grafting is a very ancient expedient, at least as old as the days of St. Paul, as we know from a passage in one of his epistles,* and is effected by taking a suitable branch or twig of a tree, usually a fruit tree, and inserting it within the sap wood of another in a certain manner, and with certain precautions which ensure the grafted branch, technically termed the scion, becoming a living part of the tree into which it is grafted; which last is technically termed the stock. Virgil describes the process in the following passage: †

For, where the tender rinds of trees disclose
 Their shooting gems, a swelling knot there grows;
 Just in that space a narrow slit we make;
 Then other buds from bearing trees we take;
 Inserted thus, the wounded rind we close,
 In whose moist womb th' admitted infant grows.

* *Romans*, xi, 17-24. † *Georgics*, II, Dryden's Trans.

But, when the smoother bole from knots is free,
 We make a deep incision in the tree,
 And in the solid wood the slip enclose ;
 The batt'ning bastard shoots again and grows ;
 And in short space the laden boughs arise,
 With happy fruit advancing to the skies.
 The mother plant admires the leaves unknown
 Of alien trees, and apples not her own.

And, though moderns say he is wrong in
 asserting that by this method,

. . . Planes huge apples bear, that bore but leaves.
 Thus mastful beech the bristly chesnut bears,
 And the white ash is white with blooming pears,
 And greedy swine from grafted elms are fed
 With falling acorns that on oaks are bred.

still the poet's description of the process is
 fairly accurate so far as it goes.

The result is that the fruit of the scion is
 invigorated by the sap of the new stock: but
 the scion retains for its fruit the original
 characteristics of its original fruit. The sap of
 the quince tree does not produce quinces in
 the scion, nor that of the crab-apple crabs.
 Though there is some modification worked in

the stock by the returned sap of the scion, the primary fact is that the scion goes on imitating in its products the original stock from which it was taken, and converts the nutriment supplied by the stock into a something different from that which the stock would have produced on its own shoots. It is difficult to picture to the mind the process by which this is done. But it is done nevertheless, and the new branch is able to follow on and imitate permanently the old stock, all connection with which has been severed, and its products are *deflected* only by the new imitation which is set up, the resultant lying between the two forces, but nearer to that of the greater propinquity.

CHAPTER VII.

IMITATION IN HEREDITY.

Heredity an instance of Imitation—Theories of Darwin, Galton, and Weismann—Arithmetical considerations—The abandoned horn of Weismann's dilemma—Imitation an inherent property of matter.

THERE is another phase of the operation of Imitation of so much importance and interest that I feel justified in now dealing with it briefly. I refer to its influence in Heredity, using that term, of course, in its biological sense. At first sight it may appear that in this regard, Imitation, used in the sense I have attributed to the term, is only another and less desirable word than Heredity for expressing the same meaning. But this is not really so. By Heredity we mean the circumstance that like produces like: that characteristics of the parent are inherited by the descendant, and so forth. And no doubt this is a special form of

Imitation,* but then it only expresses a part of its action. The propinquity in this case of Heredity is the strong propinquity of descent, one of the most dominant forms that propinquity can assume. But it still remains true that descent is only one form of propinquity. There is no necessary clashing, therefore, whatever between Heredity and Imitation, the relation of the two being simply that the former is a special case of the latter, in my sense of the term.

When, however, we come to the theories of Heredity which have been put forward by Darwin, Galton, and Weismann, the case is rather different. It is quite true that Imitation is not at all inconsistent with any one of these theories, for the mechanical methods by which Heredity is accounted for in detail by these well-known biologists would, if accepted as

* It is of course evident that the Imitation of descent connotes and refers to the whole physical existence of the *natural units* affected. The chick differs very much from the egg, but egg and chick are stages or terms in the existence or life series of the same being; and it is the aggregate of this physical existence which constitutes the biological natural unit: in which the Imitation by the bird of one or both of its progenitors is completely exhibited, as the primary directive influence in its life history.

correct, simply represent the way in which the general law operated in the special case. But then it is equally true that, if we are able to postulate Imitation as a universal process of nature, which does not necessarily require the machinery referred to, the explanations given by the biologists became to that extent less necessary, and must be judged simply by their inherent probabilities as related to known facts, and without any *a priori* prepossession. And the difficulties arising out of these theories, having regard to the facts, appear to me to be practically enormous. Whether, as in Pangenesis, we are taught to think that there is a gemmule from every cell of the parent present amongst the protoplasmic cells from which the new being derives its origin; or whether, with Galton, we adopt the doctrine of stirps containing similar gemmules; or whether we adopt the theory of a continuous germ-plasm, it seems to me that we are confronted with the vast mechanical difficulty of so much incipient capacity of differentiation being inherent and contained in so small a

space. Indeed, if we suppose the whole fauna of the world, leaving the vegetable kingdom out of consideration altogether, to be derived from one original protoplasmic source, we have to admit, if any one of the theories referred to be taken as correct, that one original unit contained within itself, as a sort of microcosm, all the incipient roots of differentiation of the myriads of creatures, and their distinctive functions also, which have succeeded it. Having regard to the vast number of these creatures and their distinctive functions, and to the fact that the differentiation is still going on apparently without limit, this would be in effect to assert that the original molecule or molecules of the first animal protoplasmic cell were practically infinitely small in bulk, which, mathematically, no doubt, is a perfectly reasonable conception. But then, on the other hand, authorities upon molecular physics contradict flatly such an assumption. We are told that the size of a molecule may be definitely expressed between limits. Thus, for example, Lord Kelvin tells us that if a drop of water is

magnified to the size of the earth, the molecules or granules would each occupy spaces greater than those filled by small shot, and smaller than those occupied by cricket balls.

The reference here is no doubt to chemical molecules, not to the biological primitive unit; but then we also know that protoplasm is a compound of chemical molecules, carbon, nitrogen, oxygen, and hydrogen being always present; and therefore each primitive unit of animal protoplasm cannot be less than, say, four chemical molecules, and is therefore not infinitely small.

The difficulty becomes still greater if we consider in connection with these theories the vegetable kingdom, from which all animal protoplasm is presumably derived. In this connection Weismann's view of the continuity of germ-plasm is more adaptable to the circumstances of the case than are the conceptions of the other biologists to whom I have referred. But that there can be, for example, in a grain of wheat, or in an acorn, any unchanged portion of the original protoplasm of

the first rudimentary vegetation of our planet to my mind transcends belief. The facts of vegetable reproduction accord indeed rather with the rejected horn of Weismann's dilemma, which he states as follows. "Either the substance of the parent germ-cell is capable of undergoing a series of changes which, after the building-up of a new individual, leads back again to identical germ-cells; or the germ-cells are not derived at all, as far as their essential and characteristic substance is concerned, from the body of the individual, but they are derived directly from the parent germ-cell."* Weismann adopts the *second* alternative, and describes it as the theory of the continuity of the germ-plasm; but I submit that the *first* alternative appears on the face of it to correspond exactly with the facts as we know them in the flora of our earth.

For what is the life-history of any tree or plant but the building up of a new individual from a seed which has germinated under suitable conditions—which individual does in its

* *Essays upon Heredity*, Oxford, 1889.

turn produce seeds which are undistinguishable from the original? The only normal difference is in the increased number of the seeds produced. Take as an illustration an annual with which we are all familiar, and upon which we are all literally dependent for our daily bread—the wheat plant. The grain of wheat is planted in the soil, and in the course of the natural year you get the plant and the new wheat grains, which exactly resemble the original seed except in so far as more or less favourable conditions of weather and of nutriment have altered them. Moreover, as far as we can see, the original potency of self-reproduction has not been in the least degree impaired by the division and re-division of a theoretical germ-plasm, though this process must have been, on Weismann's hypothesis, as applied to vegetable life, going on for thousands of years. The original grain has produced natural units, the crowning act of the life-history of which has been to produce grains exactly similar to those from which they were derived. If there is such a

thing as Imitation in nature, surely this is a true and palpable instance of it; and a theory which would imply that there is in each grain of wheat some absolute survival of a primitive plasma is confronted with an enormous arithmetical paradox. Limit your arithmetic to the known existence of the wheat plant itself, and take this at 3,000 years, which is, of course, far within the probable period of its actual existence. Allow further for the fact that the grains produced in one year do not necessarily germinate, owing to various possibilities, in the next; and in this way reduce the number of reproductive terms under consideration to 1500. Assume further that there are only ten grains produced on an average by each plant. Upon these minimized assumptions the average quantity in any grain of wheat produced this year of the whole original contents of the primeval ancestral grain of 3,000 years ago, could not exceed a fraction represented by unity divided by the fifteen-hundredth power of 10, a quantity so immeasurably small that no process of arithmetic can convey any

sensible idea of its minuteness, for it would be one part only out of a number of parts represented by unity followed by a train of 1,500 ciphers. Just to show the vastness of this figure, take the following illustration. The fixed star which displays to us the most sensible amount of parallax is α Centauri, and it is computed to be twenty billions of miles away from us in space. Now suppose that this twenty billions of miles is the average distance of stars from each other, and that there are twenty billions of such stars, each at this average distance from each other, stretching out into space in a right line upon each side of our earth so as to make a right line of 800 quadrillions of miles, with ourselves as the centre of the line. And suppose further that you constitute a mighty cubic figure of which this 800 quadrillions of miles is the length of a side; you then get a solid figure containing in all a number of cubic miles represented by 512, followed by 78 ciphers. But this number is obviously too small for our comparison with a number mar-

shalling a train of 1,500 ciphers; so let us reduce the cubic miles of our gigantic cube to very small cubes, only one millionth of an inch in each dimension: we find then that we have of these minute particles a number represented by 13 followed by 112 figures, still, of course, almost inconceivably less than the number towards which we have endeavoured to furnish a remote approximation.

In view of the vastness of these figures I cannot believe in the absolute continuity of the germ-plasm as such; and on the other hand, if at any time germ-plasm is newly produced from other substance, it appears to me that the implied conditions of Weismann's theory fail; for if new germ-plasm can be originated at any one time, not only must it be an exact copy and imitation of that to which it succeeds or becomes added, but the strong *probability* is also, surely, that this *always* happens at a natural epoch corresponding with the life of each individual member of the race; and if this is so a train of circumstances is set up which exactly agrees with the discarded horn of

Weismann's dilemma, and not with that which he has adopted.

I cannot but, therefore, come to the conclusion that as changes due to Imitation or mimetic force will account in a fashion for all biological differentiation when taken in conjunction with the laws of natural selection and survival of the fittest, so also do the theories of heredity to which I have referred lose any element of probability which arises from the *prima facie* fact that the course of events implied by heredity does actually take place, and the suggested supposition that there is no other way of accounting for this. The assumed existence of gemmules, of stirps, or of continuous germ-plasm, becomes an unnecessary assumption, and is therefore disallowed by the law of parsimony; and I think also by the corresponding natural truth that nature attains her ends in the simplest manner available. The probability of the types of all future differentiation being contained within the limit of the primitive jelly speck of a protozoic cell is less than that of a theory

which does not necessarily imply anything of the sort, but simply assumes Imitation or mimetic force as an inherent function of things in themselves, without asserting that the method of its action is either absolutely intrinsic, or to some extent extrinsic in its character.

CHAPTER VIII.

IMITATION IN THE INORGANIC WORLD.

Possible consciousness of matter—Consciousness of Plants—
Imitation in mineral substances—Mendeléeff's Law—
Crystallization—Distinction between identity and similarity.

As we pass from the fauna and flora of our planet to the so-called inanimate world around us, it is evident that we enter upon an entirely new phase of our subject: for Imitation in this regard loses to the minds of most of us all implication of anything even dimly related to consciousness. It is not that we can say of our own knowledge that matter as such has no consciousness of its own. Upon the contrary, some theorists have gone so far as to postulate an *unintelligent consciousness* in nature, although as Wallace has pointed out such an idea is itself unintelligible. It is not necessary to our purpose to deal in much detail with the ques-

tion whether matter has any other kind of consciousness, or function of the nature of consciousness, but it is impossible in fairness quite to ignore what has been said upon this point, and I therefore glance at it very briefly before proceeding further.

The celebrated naturalist, Wallace, in his work on the theory of Natural Selection, lays down this proposition:—"There is no escape from this dilemma,—either all matter is conscious, or consciousness is something distinct from matter.*" And he afterwards, in the same chapter, draws the further conclusion that "matter is essentially force, and nothing but force.†" Taking then these two pronouncements in conjunction, we are clearly bound to modify the original dilemma into the following form:—Either all *force* is conscious, or consciousness is something distinct from *force*: because in doing so, we simply substitute the term "force" for the term "matter," a change authorized by the second dictum just quoted.

* *Theory of Natural Selection*, p. 365.

† *Ibid*, pp. 365, 366.

But Wallace goes on to say in another passage that "all force is probably will-force."* Now, will-force is necessarily conscious force, for there can be no "will" without consciousness. So that so able a naturalist and thinker as Wallace leads us clearly by this series of propositions to the conclusion that all force (and with it all matter) is conscious: unless, indeed, we accept the alternative absurdity that consciousness is something distinct from conscious force.

Weismann, moreover, tells us† that Mau-
pertuis and Robinet entertained the idea of
conscious matter, and that Von Hartmann,
a recent well-known writer, designates the
sensibility of atoms as an almost inevitable
hypothesis.

I do not desire to go much further into
this special question, and the only contribution
I venture to make to the theory of the
authorities cited is, that a considerable part of
man's personal experience points somewhat in

* *Theory of Natural Selection*, p. 366.

† *Studies in the Theory of Descent*, p. 714.

the same direction. It must be agreed that every considerable portion of the human frame has a local consciousness of its own. It is true that by means of the nervous system the experiences of different parts of the body are communicated to ganglionic centres, and there co-ordinated into a higher phase of consciousness, but there is nevertheless in each part of the body an action which is responsive to local needs, and, therefore, *quasi* intelligent in its character. The most familiar evidence of this is probably to be found in connection with the pains to which poor humanity is subject. The consciousness of a pain distinctly originates in the part of the body affected by it. The cut or the blow produces pain in the first place within the definite area which it affects: there is no mistaking the region of the pain in colic or in toothache. It may be said, indeed, that "we" only feel pain through the medium of the nerves, and this is perhaps true so far as by "we" is meant the aggregate conscious "*ego*": but that the local organ or part is the first to experience the disturbance we call pain

is evident: and although we may say that its action in this regard is automatic, we do not get rid of a fact by the use of a term. There is some kind of action, and the very term we use carries with it the implication of consciousness: for if the *automatism* is absolutely complete, the adaptive action must be inherent; and inherent capacity for adaptive action is the only evidence we can have of consciousness in any object external to the "*ego*." If then we admit that the matter which constitutes the bodily framework is conscious, we have certainly taken a long step towards admitting the possibility of matter in general, being, in perhaps a low sense of the word, conscious also.

However the truth may be as to the consciousness or otherwise of matter, it is quite clear that if we reflect upon the distinction which we human beings usually draw between objects which possess consciousness and those which do not, we find that our discrimination rests mainly upon the very fact that one class of objects behaves in a manner more or less analogous to our own modes of action, and

that another class or set does not. Thus, most of us would say without hesitation that the lower animals are conscious because the close analogy between their conduct and that of a human being shows itself in many ways. Many of us would allow the possibility of a species of sub-consciousness in plants, especially in those plants which display conduct and powers of selection, in some degree resembling those of animals: thus, for example, an ex-president of the Literary and Philosophical Society of Liverpool, Mr. Edward Davies, in an address upon the "Unity of Life," refers to Darwin's researches upon carnivorous plants, and also to the same great naturalist's work on the movements of plants, and asks the suggestive question: "Why should we suppose that living vegetable protoplasm should not possess a dim consciousness of external influences, with a corresponding measure of pleasure or pain, if we admit it in the case of low forms of animal life?"

The phenomena of crystallization again have impressed some minds with the idea that

there is therein a low element of consciousness at work. But in a *general* way, we human beings do not believe in there being anything analogous to consciousness in the mineral kingdom. And the curious fact comes to view, if we think it out, that though most of us have never even meditated on the subject at all, we are, nevertheless, quite clear and positive in our opinion upon it. The real truth is that it is actually *because* we do not *see* in the subjects of the mineral kingdom anything that can be resolved by us into conduct of the nature of purposive action (*i.e.*, one form of imitative action), that it does not occur to most of us as even possible that these subjects also may be in some degree conscious. This is clear from the fact that if we *did* see or *think* we saw anything which appeared to us to indicate purposive behaviour in any object whatever, we should at once begin to assume that "it was alive," *i.e.*, that there was an element of consciousness therein. My readers may smile at such a proposition, but there is plenty of corroborative evidence of it in the

history of mankind; for it is to this circumstance that the phenomena of object worship and idolatry have been probably due amongst all races and in all countries in the world;* and further corroboration of it, very ready to our hand, may be often found in the nursery amongst young and imaginative children, who see even in the flickering shadows the suggested presence of malign intelligences.

The line of thought with which we have just dealt is, however, mainly concerned with our treatise as showing how thoroughly bound up with our mental constitution is an automatic appeal to the criterion of imitative resemblance. So far as the necessary course of our discussion goes, it is to be remembered that we have in previous chapters set aside consciousness as a necessary element in Imitation (in our sense of the term), and thus, in approaching the phenomena of the mineral

* Thus, Sir John Lubbock remarks: "The savage, indeed, accounts for all movement by life. Hence, the wind is a living being. Nay, even motionless objects are regarded in a particular stage of mental progress as possessing spirits. The chief of Teah could hardly be persuaded but that Lander's watch was alive and had the power of moving.—*Origin of Civilization*, p. 189.

kingdom, our theory suffers no breach of continuity from any denial, whether that denial be justified or not, of the consciousness of matter.

The fundamental analogy illustrating Imitation or mimetic force amongst mineral substances is to be found in Mendeléeff's periodic law. Under this we learn that if the elementary substances are classed according to their atomic weight, they fall naturally into groups and series; that their properties vary little by little as the atomic weights increase; and that there are close resemblances between elements falling within the same group. Full details upon these points would be out of place in a treatise like the present, the object of which is not to give at second-hand information which can be procured from original sources elsewhere, as such details are accessible to everyone; and I point, therefore, simply to the general facts as stated above in support of our theory,—a more remarkable verification of it so far as regards inorganic matter it would be impossible to find.

The phenomena of crystallization may also

be regarded as imitative, or, to use again our alternative phrase, which here comes in very appropriately, as examples of mimetic force. I will not attempt to deal with them further than to remark that the symmetrical arrangement of material which takes place in every crystal for each substance is always the same unless there is something in the environment to determine otherwise. This last state of things is however so often the case, that nearly all crystals are at least slightly deformed, though the general type is adhered to; and in very special circumstances, and for some substances, the influence of extrinsic propinquity is so strong that we have exhibited to us the singular phenomenon of pseudomorphism, that is to say, of substances deviating entirely from their own crystalline types and adopting those of dissimilar substances. Thus, quartz is sometimes found crystallized in the same shape as fluor spar, the crystals of quartz having apparently taken the place, by a process of substitution, of those of fluor spar and assumed their shape: serpentine in that of

chrysolite, and kaolin in that of feldspar. Another form of the mimetic effect is that known as the twinning of crystals, as is sometimes instanced in arragonite. And I have no doubt that any one, with a thorough knowledge of the phenomena of the crystallization of minerals, could multiply instances indefinitely of a form of imitation or mimicry which would be inexplicable except upon some such theory as that which we are endeavouring to illustrate.

Not, however, to go further into detail with regard to Imitation in inorganic matter, the position may be summed up much as follows. Every molecule of any given substance behaves under similar circumstances in the same way as every other similar molecule. One molecule of free hydrogen, for example, behaves in exactly the same manner as any other would, and this is indeed the only foundation for our idea of identity as between different molecules; identity as we form the conception in our minds being simply an inference from behaviour. No two things can

really in strictness be *identical*, *i.e.*, be the same thing, for they have different actualities of mass; but by a law of thought, which shows how fundamentally the hypothesis of Imitation lies at the root of our mental processes, if and when the action, properties, and behaviour of any two things as known to us are all as far as we can discern exactly similar, we then regard them as the *same*; but we have only to reflect upon the facts to see that this *sameness* is not *sameness* in the primary meaning of the word, but is an expression which connotes imitative *similarity* only, and not actual identity.

It must not be expected, however, that in a department of nature so complex in its exhibits as the mineral kingdom we shall find the same kind of evidence of Imitation as we do in organic life. For it is of the very essence of the case that the true natural inorganic units are found to be mixed up together in the most various ways in the rocks and soils of which the material of our planet is composed; and it can be only as we isolate elementary bodies such as the metals, or obtain bodies of

few constituents in which one or two elementary bodies largely predominate, that we can expect to get the definite effects which we regard as imitative or mimetic, that is to say, effects following absolutely, unless deflected, the behaviour of similar bodies. It is really a corroboration of our theory that, in the complex mixtures of inorganic substances which nature spreads around us, anything like morphic regularity is conspicuously absent, and absent, moreover, in proportion to the complexity of the material. When we come, however, to bodies which we have reason to think to be elementary, or at any rate of a high degree of simplicity of composition, we do find exactly that uniformity of behaviour and action which is all the evidence we can expect of a process of Imitation which, as regards inanimate matter, is only another expression for the uniformity of nature. That uniformity is true of such bodies is obvious, and is a fact which comes home to our minds with something like axiomatic force.

CHAPTER IX.

IMITATION IN MOLECULAR ACTIVITIES AND NATURAL FORCES.

Wave transmission—Heat, light, and electricity—Evidence of the telephone—Wave action—Reproduction and Imitation—Gravitation a mode of Imitation.

IN the molecular activities, which are common to both inorganic substances and organized beings as well, we have a field full of evidence of Imitation; but it is in inorganic matter that these activities can best be observed. Heat, light, electricity, and so forth, have an immense influence upon animal tissue, but it is much easier to view their action when disassociated from those processes which are modified by vitality. It is true that even in the inorganic world we are thus dealing with phenomena which lie at the extreme verge of our powers of observation, but it is not necessary for the purpose of this work to have regard to them

so much in their subtleties, as in those circumstances which are best known and generally admitted. We know, for example, that the wave or vibration theory of transmission appears to express correctly the manner in which the phenomena of light and heat pass from one object to another, just as it also expresses for a different medium the transmission of sound.

Physicists do not go so far as to say, with equal certainty, the same of electricity and its allied function of magnetism, but the received opinion appears to be that light is to be regarded as an electro-magnetic phenomenon, and that electricity is transmitted through the same medium as light. In the presence of these views, and of the undulatory theory of light, which is now so generally accepted, it certainly appears to be reasonable to assume that electrical energy is in some way or another conveyed by means of undulations or vibrations.

Without, indeed, going further into theory on the subject, the discovery of Hertz, by

which it was shown that a rapid oscillating electric discharge produces a disturbance which is propagated as electrical waves with a velocity like that of light, will be held conclusive to most minds upon the point, the main difference appearing to be that the waves of electrical disturbance produced in this manner are much longer than are light-waves.

If, however, some corroboration is required on this point of the transmission of electricity by undulatory movement, it may be found in the familiar facts connected with the use of the telephone. In this well-known instrument the human voice creates vibrations, that is to say, vibrations of the atmosphere, which, in their turn, cause vibrations in the diaphragm of the receiver; which, again, affect the so-called electric current in such a way, that that electric current takes them up at one end of a wire perhaps hundreds of miles in length, and sets them down at the other end of the wire so far unchanged that they create exactly analogous vibrations in the diaphragm of the receiver at that other end; which again set up

vibrations in the atmosphere which reproduce to the auditor the sound of the original voice with all its peculiarities. Those miles of wire remain, however, so far as observation goes, entirely unchanged in their material substance during the process; and this fact, taken in conjunction with the phenomena already described, leads, in the absence of evidence to the contrary, to a strong corroboration of the view that the electrical process in the wire, as well as in the atmosphere and in the diaphragm, is one of vibration or wave movement.

Let us consider shortly then what these facts imply.

The first notion of the propagation of energy by waves arose, no doubt, from viewing one of the grandest of terrestrial spectacles, that of those great bodies of water which, as oceans and lakes, form so large a feature in the geography of our planet. There is no sight more calculated to impress the mind than that which is manifested to one who stands on the margin of that vast body of water which covers something like three-

fourths of our globe; who witnesses the rise and fall of its tide; who hears its quiet murmur on the beach; or again, who sees its billows lashed by tempest almost seeming to shake the solid earth as they burst upon the strand. We live and move in another great ocean, the atmosphere, which is still more widely spread, but it is not visible to us, and, therefore, of the two great masses which are by far the most important homogenous features of our planet, the sea is the one which most affects the imagination of man. And just as the movements of the sea furnished the first idea of wave action, so do they still furnish us with the most complete exhibition that Nature affords to us of her methods of transmitting force.

I need hardly remind the reader that there are different forms of the wave forces thus displayed to us. There is the great tidal wave, which is so long that we almost forget that it is a wave at all. There are the rollers of the deep which conform to a definite law of their

own ; there are the breakers, which are modifications of the roller waves ; and there are again ripple waves which, in spite of their smallness, spread with great rapidity, and which, owing to surface-tension, run faster the shorter they are. But all these sorts of waves agree in one circumstance, *i.e.*, that the force which they convey is not caused by the transmission of particles, though this does take place to some extent in certain kinds of waves, but by the movement of particles or molecules transferring itself to other molecules and so passing on the developed energy. In the true roller wave, for example, the molecules move, for adequate depths, in small circles of greater or less diameter according to their position in the wave, but they do not progress themselves. It is the *energy* which is transferred, and transferred by means of contiguity ; that is to say, in the form of language used in this treatise, the molecules are imitated by the adjacent molecules ; they follow their action and their behaviour, and for huge distances the process continues till its operation is either superposed

upon similar phenomena, or lost in the composition of forces. I make no attempt to discuss the details of molecular action as due to disturbance of equilibrium, stress, and elasticity, for we have no occasion to endeavour to follow out the analysis of physicists like Stokes, Lord Kelvin, and others, who have done so much service by their investigations on these points to science. The *general* result is sufficient, that is to say, that the most conspicuous molecular activities in inorganic nature are all examples of undulatory or wave action, and that wave action from its nature is essentially mimetic or imitative. In vibratory or undulatory effects it is clearly the movement of one particle which sets up a corresponding movement in the adjacent particles, the effect diminishing in energy in a definite way, but for homogeneous matter with a very small rate of reduction. That is to say, the particles follow or imitate the behaviour of each other in such an exact fashion that you can, so far as your means of observation will allow, *pick up* the effects of the transmitted heat, light, or electrical conditions,

at any distance you please within the area of a homogeneous material; and you find that so long as they are perceptible at all, though the *quantity* has diminished in a ratio varying with distance, the *quality* of the effect is unchanged. The heat of a furnace at one end of an iron rod is represented by a diminished degree of heat at any point in the length of the rod. The undulations of light which left Sirius more than fourteen years ago strike upon the human retina with an effect so nearly the same for all available variations of distance, that the whole diameter of the earth's orbit round the sun makes no appreciable difference in its potency or in its character. The electrical state which is constituted at one end of a marine cable, is set up at the other end in a minute fraction of time; and if you *pick up* the cable in mid-ocean, you can there observe an electrical state identical in quality, and differing only in quantity from that existing at the end of the cable. Thus, it becomes evident that, just as millions of molecules are passing away in biological units during every

second of time, their places being taken by millions of other molecules exactly similar in substance and in function, so also, in the play of those activities of nature to which I have referred, particle is continually acting upon particle, and molecule upon molecule, transmitting in proportion to their propinquity the most subtle phenomena for which any definite law of operation has been conceived and formulated. It is quite outside the requirements of our theory to picture the exact way in which the process takes place. All transmitted activities must be modes of motion, and the bare fact that activities are transmitted from point to point and particle to particle, with approximately exact similarity in kind, is all that is essential to corroborate the theory of Imitation or mimetic force so far as the molecular activities to which I have referred are concerned.

That these, however, are only some of the forms of molecular activity I readily admit; it is no object, however, of this treatise, nor is

it within the scope of the author's capacity to deal comprehensively with the problems of physics.

It would be improper, however, not to refer briefly at this stage to the molecular activities of organic life. These are of a highly complex character, and those which are most characteristic of living tissue are usually described as metabolic, under which general terms the processes of assimilation and building up (*anabolic*), and those of dissimulation and disintegration (*katabolic*) are included. Although, however, these phenomena have been the subject of most patient observation and research, very little indeed is known of the wonderful methods by which nature produces out of protoplasm all the highly differentiated cells and tissues which constitute the living being. The process may be observed to a certain point, but the efficient change eludes the observer. All that we know is that under the local influence of the differentiated organ or tissue, cells are built up exactly suited to the requirements of

their situation and function. As muscular and nervous cells and tissue are consumed, new cells and tissues are built up in their place; and we appear to be almost driven to resort for an explanation of this wonderful adjustment either to assume something like intelligent consciousness and purposive action in biological molecules, or, as an alternative, to some general and at the same time simple law, such as is implied in the imitative process in nature which I have endeavoured to illustrate in these pages. Of the two alternatives the latter is the simpler; and it does not involve any greater strain upon our powers of conception than does the view of Weismann, with which it in no wise conflicts, that "Reproduction is in truth an essential attribute of living matter."* Looked at from a certain point of view there is indeed a close analogy between the two propositions, as is evident if we substitute, in Weismann's pronouncement, for the word "*Reproduction*," the words "*Imitation or mimetic force*," and if we remember that within

* *Essays upon Heredity*, p. 159.

certain limits the two phrases contain the same idea; for Imitation is essentially a mode of reproduction, and reproduction is essentially also a mode of Imitation.

Coming back to the definition of Imitation given in our first chapter, as the tendency which natural units have to imitate or follow the behaviour of other natural units in proportion to their propinquity (using this last term in all its senses), it is evident that something like a classification of propinquinities would be a useful means of preparing the way for a more complete verification of the general theory. But there is one case in which we can deal with the most simple form that propinquity can assume, that is to say, the case in which we are able to disregard all considerations excepting those of mass and distance.

According to our theory, bodies should follow or imitate each other, when all other forms of propinquity have vanished or become reduced to relatively infinitesimal proportions, in some kind of proportion to their distance

from each other, and otherwise in proportion to their mass alone. Now this is something which *does* actually take place. The well-known law of gravitation is exactly to that effect. Bodies *do* "attract" each other in direct proportion to the product of their masses, and inversely in proportion to the square of their distance from each other. But "distance" and propinquity in space are obviously different ways of expressing the same relation. If we realize further the physical fact that there is no such thing known to us in the universe as a state of absolute rest, and that, therefore, gravitation is itself a function of bodies in motion: and if we bear all these data together in mind, we are led at once to see that the influence which I have termed Imitation or mimetic force coincides exactly with gravitation in its effects in cases where all considerations except those of mass and distance are eliminated. For whether we say that bodies "*attract*" each other in proportion to the product of their masses, or that they *imitate* or follow the behaviour of each in a similar

proportion, is only a variation of language. And it is some justification of the use of the term Imitation, with its anthropomorphic associations, for the purpose of expressing an influence which attaches to forms of matter usually regarded as absolutely unconscious, that Newton himself used for a similar purpose the term attraction, to which objection could be just as fitly applied, had it not been consecrated by the usage of more than two hundred years. Nor is it to be overlooked that Kepler used, as one method of expressing the same relation, the word "obedience," as between the object attracted and that which attracted it. So that whether we speak of attraction, obedience, or Imitation in the sense of mimetic force, as being the hypothetical cause of gravitation, we are really expressing the same idea, with that same instinctive reference to the analogy of human experience which shows, in a final aspect, the necessarily imitative quality of all our attempts at framing any ideas whatever of this nature and kind.

CHAPTER X.

IMITATION IN SERIES, ETC.

Retrospective considerations—Ideas of *series* and generating function—Views of Darwin, Weismann, and Haeckel—Imitation illustrated in nature of series—Conclusion.

I HAVE dealt in the foregoing chapters in a manner which may appear to the reader to be unduly brief with some important subjects, and have omitted to consider others which might fairly have been brought into review to assist in demonstrating the truth of the theory suggested in this treatise. But it has been no part of the plan of this work to enter into copious details with regard to subjects upon which competent authorities have placed before the public the results of their thought and observation. My sole purpose has been to adduce sufficient evidence in support of the theory propounded, without making any attempt to accomplish the task, impossible to

myself, of anything like a full survey of its ramifications.

I must, however, before concluding, deal briefly with certain points which have been alluded to in previous chapters. The first of them is the idea of series which has occasionally been referred to, and which underlies many of the illustrative arguments used. The theory which is suggested is that there is a continuity in all phenomena, both of mind and matter, each in its own category, and that these phenomena vary from each other by small differences only, in such a way as to indicate that that which I have termed the generating function is the same for these allied phenomena. There is nothing at all original in the first part of the suggestion, for it is really quite in accordance, if we choose to put mind and matter into separate categories, with all theories of creation and development. For it is not at all in conflict, on the one hand, with the belief in a great personal First Cause which lies at the basis of nearly all religions; nor, on the other hand, if anyone divests the

conception of a First Cause of the element of personality, is it incompatible with the views of the most gross materialism. To view the theory of continuous series in phenomena from the ground of accepted scientific teaching, we need only refer to Darwin's conception of biological development, which distinctly follows these lines. In his judgment, the gradual accumulations of slight differences have produced, by long consecutive operation, the various distinct forms of vegetable and animal life from an ancestry common to large families of present existences. He does not go so far as to say that all known forms have been derived from one ancestral atom of protoplasm, as some scientists would lead us to believe; but, nevertheless, the whole evolution of any existing form of life has, upon his theory, been the outcome of a great number of slight changes extending over an untold number of successive generations; that it to say, in our phraseology, that there has been a *series* of modifications. As a further illustration of the same point, we have a theory of Haeckel,

which is generally accepted as correct, that the Ontogeny and Phylogeny of forms of life are correspondent to each other; that is to say, that the history of the individual in its embryonic development, exhibits in a condensed and microcosmic form the history of the chain of genetic life of which the new being is the latest link. "This fundamental law," says Haeckel, " * * is briefly expressed in the proposition: that the History of the Germ is an epitome of the History of the Descent; or, in other words: that Ontogeny is a recapitulation of Phylogeny; or, somewhat more explicitly: that the series of forms through which the Individual Organism passes during its progress from the egg cell to its fully developed state, is a brief, compressed reproduction of the long series of forms through which the animal ancestors of that organism (or the ancestral forms of its species) have passed from the earliest periods of so-called organic creation down to the present time."* This Ontogeny, therefore, is a true series, and is, in its relation

* *The Evolution of Man*, p. 6.

to the main series of successive forms of life, strictly analogous to that which is termed by algebraists, an auxiliary series.

Lastly, upon the point above referred to, we have the pronouncement of Weismann in his essay upon "Life and Death" to the following effect: "Life is continuous and not periodically interrupted: ever since its first appearance upon the earth, in the lowest organisms, it has continued without break; the forms in which it is manifested have alone undergone change. Every individual alive to-day—even the very highest—is to be derived in an unbroken line from the first and lowest forms."* A statement which, in effect, implies the *series* or unbroken line of which all individuals alive to-day are the present terms.†

* *Essays upon Heredity*, p. 159.

† It is worthy of remark that the doctrine of pre-established harmony of Leibnitz is distinctly founded upon a law of continuity in nature. According to that philosopher, there is no break in nature, but everything takes place by degrees, the different species of creatures rising by insensible steps from the lowest to the most perfect form. I feel all the more bound to make this reference to the views of this celebrated thinker, as his doctrine with regard to monads, and upon other points, appears to me to have something in common with the theory expressed in this treatise.

The foregoing consideration as to the existence of biological series will probably be admitted by everyone. But proof of the existence of a continuous series does not prove the existence of a law of formation for that series. Unless we know all the terms of a series, or unless we can show that it is recurrent and convergent, though infinite, it is not possible to fix upon any one formula and describe that either as its generating function, or, in the strictest sense of the term, as the law of its formation.* And, therefore, where I have used the former phrase, it must not be supposed that it is employed in any absolute mathematical sense. For it is impossible to

* An illustration of this has been given in the following manner. Most people would say that the series expressed arithmetically by the consecutive terms 1, 2, 4, 8, etc., was very obvious and simple in its formation, and that the law of this series was clearly that each term shall be double of that preceding it. But this is really not at all a valid assumption. A series *beginning* with these four terms *may* be constituted in many different ways: thus $\frac{1}{2}(n^2 + 5n + 6)$, taking n successively as equal to the terms of the arithmetical series 0, 1, 2, 3, 4, 5, etc., satisfies the first four terms 1, 2, 4, 8 of the above series; but with this formula the 5th term of that series is 15, and the 6th 26, not 16 and 32 respectively, as would have been the case if the apparently simple law of *doubling* had been absolute. And so of other cases.

say that even a large proportion of the vast numbers of series into which the phenomena of existences may be resolved are convergent, although many of them certainly appear to be so, as is clear in the life history of individuals, and also in the case of sundry forms of life which, after being evolved during an enormous number of successive generations, have ultimately become extinct. All, therefore, that I have sought to indicate under this idea is that a vast number of phenomena, biological and non-biological, can be arranged in series so far as to point to a probable general law or generating function underlying them, of which law we find mimetic force is an important and pervading factor.

It is not, indeed, sound in hypothetical reasoning to infer the antecedent from the consequent, but it is nevertheless certain that, when it can be shown that a great number of consequents do accord with one particular antecedent, and that there are no other consequents apparently in disaccord with it, the human mind does, as a matter of fact, accept

the proof of the existence of the antecedent as provisionally complete.*

Nor does the argument from series stop at this point. In any true series, each term is connected with the preceding term or terms in a two-fold manner; first by similarity, and secondly by definite variation. The $(n + a)$ th term follows or imitates the n th term in its fundamental identity, and it is modified by the law of the series into a different expression. In other words, the $(n + a)$ th term is equal to the n th term modified by a factor, and if my argument is admitted in its fullest scope, both the prior term and the modifying factor are subjects of Imitation, and thus the expression for the $(n + a)$ th term, and, indeed, for each other consecutive term, is in a double and complete sense the outcome of a process of Imitation, exhibited both in the fundamental similarity, and also in the definite variation of the new term.

In conclusion, then, I will simply restate

* The reader who is interested in this consideration, will find it more fully dealt with in the Appendix.

the theory to which this treatise is intended to point; and that is that there is a universal influence in nature essentially at one with that which is familiarly known in the human subject as Imitation. And in using this term, invested with a wider meaning than is customarily given to it, I have used an expedient which may be challenged upon purely verbal grounds, but which has at least the advantage of combining, in one conception, a great number of facts which would otherwise display but little relation to each other.

APPENDIX.

IMITATION IN REASONING.

Mimetic character of the reasoning process—Syllogistic theory of Aristotle—Whately—Mill—Jevons—Analysis of Darwin's theory of Natural Selection—Reasoning based on probabilism—Canon of the process.

THE primary object of this Appendix is to justify the statement made in the second chapter of this treatise, to the effect that the true canon of affirmative reasoning may be expressed as follows:—

That which is true of a thing is probably true of its like; the degree of probability depending upon the extent and thoroughness of the resemblance: but it is also incidentally intended to show that, as we human beings thus always reason affirmatively from resemblances, and negatively from differences, there is in this fact a remarkable and further confirmation of the theory of Imitation. For not only is reasoning,

as we have already seen, based upon observations and recollections of a mimetic kind, but
* the very form and method of reasoning does also, if our canon is true, consist of inferences drawn from the degree in which the subjects of our logical process do or do not resemble or *imitate* each other.

The considerations now submitted might, therefore, have been placed naturally in the earlier course of the general argument submitted to the reader, but it was felt that the effect of doing so would be to impair to his apprehension the general unity of the treatise as a whole, in consequence of the amount of space which such considerations must of necessity occupy; and I have, accordingly, relegated them to this Appendix as being the more convenient course to pursue.

The process of reasoning is clearly co-extensive and coincident with that which is termed logic, logic being not only a science of reasoning, but also a descriptive theory of the method which the human mind adopts for

the purpose of reasoning. It happens that this subject of logic is of all branches of mental science the one which has been most thoroughly dealt with, and upon which the most definite conclusions have been reached. Let us consider, therefore, what writers upon logic have to tell us with regard to it.

It was to Aristotle, then, perhaps the most original thinker who ever lived, that we are indebted for the first formal theory of the logical process. The dialectics of his predecessors bore no such formal character. But Aristotle propounded the doctrine of the syllogism, and it is hardly too much to say that from the time when his writings became generally known, down to the time of Lord Bacon, an interval of something like seventeen hundred years, the doctrine of the syllogism ruled supreme over the scholastic intellect of every country in Europe. The theory was simple enough. It was practically summarized in the celebrated *dictum de omni et nullo*. That, says Aristotle, which can be predicated of a class, can also be predicated of everything compre-

hended within that class; and on the other hand, that which can be denied of a class, can also be denied of every member or individual of which that class is made up. The scholastic logicians have ever since agreed that all reasoning is based upon these two rules; and we may therefore pass over in silence intervening writers on the subject, and come down at once from the fourth century B.C. to our own time, when we again find the same theory advocated by Archbishop Whately. In his work on Logic,* he tells us that in every instance in which we reason, in the strict sense of the word, a certain process takes place in the mind, which is one and the same in all cases, provided it be correctly conducted; and this process is in effect to proceed by means of a syllogism or syllogisms framed in accordance with the above-named general rules.

According to Whately, it is therefore certain that everyone is in the habit, whether consciously or not, of turning out in his mind a succession and variety of syllogisms. But just

* Book I, § 1.

as in the act of walking there is involved a complicated train of muscular action which pedestrians in general would find it extremely difficult to describe, so it may be that the reasoner is also unaware of the mechanical process by which he is supposed to proceed. For the benefit, therefore, of those of my readers who have no exact ideas upon the subject of syllogisms, I will briefly explain the term.

A correctly framed syllogism, then, consists of three propositions, two of which are called the premises, and the third the conclusion. In one of these premises something is asserted or denied of a class of objects or things. In the other premiss it is asserted that something else is included in the class already referred to. The conclusion then follows, that what has been stated as true of the class is also true of that which is comprehended within it. Thus, to adopt an illustrative syllogism, we say :—

All animals with frontal horns are ruminants; antelopes are animals with frontal horns : therefore antelopes are ruminants.

This is the typical form of the syllogism. Logicians, it is true, enumerate different moods and figures, as they are called, but these differ from each other only in the arrangement and the quantification of the terms, and not in the essential character which gives the syllogism its validity. That validity depends chiefly upon one essential condition, which is that one of the two propositions called premises shall contain what may be termed a universal statement, for unless this be the case, according to the scholastic logicians, nothing can be inferred. Thus it is meant that in the case already cited, unless we are in a position to assert that *all* animals with frontal horns are ruminants (which is in this case the universal statement), we could not have proceeded, at least from the premises, to the conclusion that antelopes are ruminants. For if only *some* frontal horned animals were ruminants, it would remain possible that antelopes were not amongst the "some," and thus no inference would follow.

In every valid syllogism there must there-

fore be one premiss which is universally true, and a theory which embraces this postulate is represented to us as being a satisfactory account of the nature of the reasoning process. But I think it will be evident to any one whose mind is not already prepossessed by his scholastic studies, that to reduce *all* reasoning to a process of this nature is thoroughly inaccurate. It will surely not be denied, for example, that *children* reason from the earliest age. To assert the contrary would be to propound the paradox that they begin to reason at a certain age, and do not reason before it. Is it to be supposed then that in the reasoning process of the young child there can be anything of the nature of a universal premiss? If a child did not begin to reason till it had in its mind what appeared to be a universal truth, it would clearly never begin to reason at all. So, again, with man in his aboriginal state. If we wish to avoid the difficulty of supposing that in a certain stage of his racial development, reason dawned upon him, whilst prior to that all was intellectual night, we must assume that the

genus homo possessed the reasoning faculty from the first moment of man's coming into being. But, at that first moment, he could not possibly possess a universal premiss. His knowledge could only be gathered up as a succession of individual truths. If, therefore, the *dictum de omni et nullo* is the only real basis of the reasoning process, man could not have reasoned till he had classified those truths into general and universal propositions. Classification itself, however, is clearly a process of reasoning. And thus we are confronted with the dilemma—either man reasoned before he classified, or he classified before he reasoned; but as classification is a form of reason, he could not have done the latter; and we are therefore driven to the conclusion that reason preceded classification, and consequently that the dictum is *not* the universal basis of the reasoning process.

These considerations sound more abstruse than they really are; and, therefore, I will illustrate the insufficiency of the syllogistic theory in a concrete form, which will possess

some familiar features. The Darwinian theory of the origin of species is well known to every one, and I will exhibit the argumentative steps by which that theory is arrived at in a syllogistic form.

Darwin fairly described his book as one long argument. The argument is long, however, chiefly in the sense that the writer had necessarily to occupy much space in illustrating certain fundamental positions by a lengthy and admirable accumulation of facts; and it is possible to summarize his train of reasoning, as such, in the following few propositions:—

(1) All races of domesticated animals have been subject to great variations due to human selection.

(2) If human selection can produce such great variations in domestic animals, any other process of continuous selection would produce variation in animals which have not been domesticated.

(3) There is, and always has been, a process of selection going on during the whole

history of life upon our planet, such process being due to the struggle for existence, and the principle of the survival of the fittest.

(4) Such a process of selection continued for such a length of time, is sufficient to account for all the specific differences with which we are acquainted.

(5) Not only will such a process of selection account for these specific differences, but it will also account for many observed facts such as the following:—(a) That in a region where many species of a genus have been produced, these same species present many varieties; (b) That species of larger genera differ from each other by a less amount of difference than do the species of smaller genera.

(6) Viewing the above statements as a whole, it follows that the specific differences with which we are acquainted, and, indeed, all specific differences, are due to this process of natural selection.

Reduced to the syllogistic form, and expressed as a *sorites*, or string of syllogisms, each as far as may be dependent upon its pre-

decessor, the above line of argument may be stated in substance as follows:—

(1) Human selection of domestic animals is a cause of variation. But human selection is a form of continuous selection: therefore, every form of continuous selection of any kind of animals is a cause of variation.

(2) Every form of continuous selection is a cause of variation. Natural selection is a form of continuous selection; therefore, natural selection is a cause of variation.

(3) Natural selection is a cause of variation. Causes of variation ultimately produce specific differences; therefore, natural selection has produced specific differences.

(4) Natural selection has produced specific differences. The differences between adjacent forms of life are specific differences; therefore, the differences between adjacent forms of life have been produced by natural selection.

(5) If the variation of species by natural selection is a true hypothesis, the phenomena referred to above (*a* and *b*, etc.,) would follow. But these phenomena are really in accordance

with observed facts, and, therefore, the variation of species by natural selection is a true hypothesis.

Of the above syllogisms, the first four are categorical, and are so connected, that so far at least as they are concerned, all of them must be valid in order to prove the ultimate conclusion. The fifth syllogism is conditional and independent of the others, and rests entirely upon its own logical merits. Viewed upon this ground, it must, however, be at once dismissed by the formal logician as a case of the well-known fallacy of inferring the truth of the antecedent from the truth of the consequent. Reverting then to the preceding four syllogisms, we find that the first, third, and fourth are invalid according to the rules of formal logic. The conclusion of the first introduces a new term, and even if this were not so, it shows an illicit process of the minor. The second is regular, and is a syllogism in the mood termed *Barbara*. The third is a case of non-distributed middle, and is therefore a fallacy: The fourth and concluding syllogism

of the series to which it belongs is also a **case** of non-distribution of the middle term, and therefore invalid.

According to rigid logical rule, then, as taught by Whately, Darwin's great argument would tumble to pieces, like a chain broken in three or four places, and could prove absolutely nothing. But an argument which has carried irresistible conviction to so many enlightened minds is evidently far superior to the arraignment of any such tribunal. The formal logicians may tell us that there is nothing in it, but men's minds generally have determined otherwise ; and thus it follows that the process of scholastic logic is *not* that by which men *always* reason. It may be said, indeed, that I might have framed my illustrative syllogisms otherwise than I have done. Such is perhaps the case. With a little exercise of ingenuity it might be possible to set up some other permutation of the terms. But no ingenuity whatever would avail to construct the argument into the form of irreproachable syllogisms.

If other proof of the insufficiency of the

sylogistic theory were required, it might, however, be obtained from Archbishop Whately himself, when discussing the allied subject of Rhetoric. He tells us in his treatise on that subject of a certain argument which he calls the argument of progressive approach, and to which he allows a high degree of force. He cites, as an instance of this form of argument, the demonstration of the law of nature, called the *vis inertiae*, viz., that a body set in motion will eternally continue in motion with uniform velocity in a right line, so far as it is not acted upon by any causes which retard or stop, accelerate or divert its course. Finding, he tells us, that the original impulse is, in every case we can examine, more and more protracted in proportion as we more and more remove impediments to motion from friction and resistance of the air, we reasonably conclude that if this could be completely done (which is out of our power), the motion would never cease, since what appear to be the only causes of its cessation would be absent.

I admit at once the cogency of such an

argument; it corresponds, in fact, with the argument from series which I have ventured to use in this treatise; but the most ingenious logician could not express it in a syllogistic form. And thus, Whately, in the *practice* of reasoning, refutes his own *theory* of the process.

The theory of the syllogism, therefore, though it has some useful points, cannot possibly be accepted as representing the process which always takes place in the mind in drawing what is nevertheless a legitimate conclusion. Not, indeed, that formal logic is, therefore, useless. Apart from other considerations, its rules furnish, in many cases, the means of placing a train of reasoning in such a form as to show where the error, if any, is likely to lie.

It was doubtless for reasons analogous in some degree to those I have stated, that Lord Bacon, in his *Novum Organum*, and elsewhere, inveighed so strongly against the scholastic logic. But the gravamen of his charges appears to have been that the logicians neglected observation, and occupied themselves with

verbal questions. His attacks were, therefore, rendered against the abuse of the method rather than its use. Could Lord Bacon have been privileged to converse with John Stuart Mill after the fashion of the *Imaginary Conversations* of Landor, as to the merits of the system of logic propounded so long after his time by the philosopher of Westminster, it is certain that he would have found himself much in accord with the views expressed by the latter writer.

Mill's work on Logic will probably be considered in the future as the greatest of his literary achievements. He left a great intellectual cairn to mark his memory, but it was in dealing with the subject of logic that his clear intellect found its most appropriate sphere of exertion. He pointed out the insufficiency of the syllogistic theory of reasoning. Flying deliberately in the face of Aristotle, he tells us that not only may we reason from particulars to particulars without passing through generals (universals as I have

termed them), but that we perpetually do so reason. He resolves all inference, consequently all proof and all discovery of truths not self-evident, into induction and the interpretation of inductions, and lays it down that all our knowledge not intuitive comes to us exclusively from that source. What induction is, therefore, and what conditions render it legitimate, cannot but be deemed, according to Mill, the main question of the science of logic.

I believe that in these views Mill is essentially right, and that as nearly as a word can do so, the term "induction" accurately describes the process which takes place in the mind in the act of reasoning. But it appears to me that Mill is hardly correct in his further development of this portion of the subject, and I am consequently compelled to deal briefly with the general basis upon which he makes his theory of induction to rest.

For the efficiency to the mind of inductions in general, Mill demands as a necessary postulate that there should be some certain and universal inductions still wider in their scope,

and it is only in respect of there being such that, according to him, a logic of induction is possible. He goes on further to tell us that these certain and universal inductions are the laws of Number, the law of Space or Mathematics, and the law of Causation. And he thus rests his whole theory of the cogency of inductive reasoning (and therefore all proof) upon a basis which is, to my mind misleading. If the laws of Number, Space, and Causation, or any of them, are essential to the reasoning process, it clearly follows that no one could have ever reasoned logically without tacitly admitting them. Any demur to these laws would be fatal. But unless these laws are absolute intuitions—which few would be bold enough to contend—it is certain that the reasoning process in the young or uneducated can be attended by no such postulate whatever.

Before passing further, moreover, let me point out that the conclusions which are arrived at in the Darwinian theory of the origin of species, used already by way of illustration, are as absolutely incapable of proof by

Mill's method as they are by that of Whately. The complete process of proof, according to Mill, requires first, induction, and then verification. So that to prove the variability of species we should require absolute evidence of some species having become transmuted and developed from some other species. But evidence of this nature is exactly what we have hitherto been unable to obtain. Darwin's hypothesis is so far verifiable only as regards the extinction of some forms of life, but not at all in respect of the genesis of new ones specifically different from their progenitors. And, therefore, according to Mill, as well as Whately, the Darwinian theory would fall to the ground.

There remains only one other writer whose views on the subject of Logic I think it needful now to refer to. Professor Jevons, who was cut off in the prime of his manhood by an untimely accident, and whose originality as a thinker was evidenced in more than one branch of intellectual activity, produced a volume which established a distinct advance

upon anything that had previously appeared. His cardinal principle is that the "substitution of similars" is the basis of all reasoning; that is to say, that we pass from one proposition to another by substituting a new but similar term in the new proposition in the place of the equivalent or homologous one in the original. In this view I believe that Professor Jevons embodied a profound truth. Had he adhered to it in its simplicity we might almost adopt his theory. But he departed from it in the expansion of his system. He assigned to the deductive process an importance which it cannot from my point of view be conceded to possess. He substituted throughout his formal equations the idea of identity for that of similarity, thus throwing away in practice the very key to the true nature of the logical process. Reverting to the argument of Darwin, we again find that this chain of reasoning cannot be developed on the basis of Jevons' identic propositions, any more than by accepting the views of Whately, or of Mill.

I arrive, in fact, at the conclusion, after

surveying the opinions of the three representative writers at whose views we have glanced, that we must take something only from each of their systems in order to construct a true theory of the reasoning process as it actually takes place. All of them appear to me to have overlooked a very important circumstance. No theory of the reasoning process can be a correct description of it which does not account for all the various forms of its exercise. It is evident that the fundamental elements of the method of reasoning must be the same in ignorant persons as in the best cultivated. The process may not be so accurately conducted, but there can be no material difference in kind between reason in the philosopher and reason in the savage. Even persons who do not in the least comprehend the rules of the syllogism as laid down by Whately and others, the necessity of the law of Causation as postulated by Mill, and the permutations resulting from the identical propositions of Jevons, do nevertheless reason. So that what is required is a law of thought, which shall account for the

crude inductions of the child, and which shall lie at the base of the most profound trains of reasoning of a Newton. Both reason; and no description of the fundamental features of the logical process which will not apply equally to both can be a correct one.

In the first place, we must agree with Mill, then, that all real knowledge is gained by induction—and induction only—by observation, that is to say, of that which comes under our apprehension. Secondly, we must admit with more fullness and fidelity than Jevons, that we can only reason from one thing, or fact, to another, in respect of the similarity or dissimilarity which exists between them. And with Whately, and the ancient school which he represented so well, we may, with advantage, draw all arguments into a form approximating to that of the syllogism for the convenience of criticism.

We come to the conclusion, then, that all reasoning is simply founded upon a perception of similarity or difference, *i.e.*, imitateness or non-imitateness in the data; and its canon

may be laid down nearly in the words of Jevons himself, though we must apply it with more universality than he did :—

That which is true of a thing is probably true of its like ; the degree of probability depending upon the extent and thoroughness of the resemblance.

All conclusions at which we arrive by reasoning are obtained by means of this fundamental conception, and are, therefore, probable truths only ; the so-called process of reasoning being, therefore, simply an estimation of probabilities based upon past knowledge and present data.

This principle is clearly as applicable to the child or savage as to the man of science, the latter simply reasoning better because he knows more. But the process is the same always. A child tastes a lump of sugar ; it pleases the infantile palate, and the little hand is stretched out for another white crystalline lump, on the simple induction that because one such lump was palatable, another which resembles it is likely to be palatable also. He does not frame a syllogism, the major premiss

of which is that all white crystalline bodies are agreeable to the taste; nor yet does he reason with Jevons that the two lumps of sugar are identical: he knows better than that, because the first lump has already reached its destination. So, again, with the scientific expert. In his long survey of animal forms, he has found that all the animals with frontal horns, of which he has any knowledge, ruminant; and he argues that in all probability all others possessing the same peculiarity ruminant.

Applying the process to the Darwinian theory we get the following propositions:—

It is a known fact that it is possible to vary the form and qualities of domestic animals by selection.

That which is true of all domestic animals is probably true of all animals.

It is therefore probable that the form and qualities of all animals may be varied by selection.

That which is true of one mode of selection is probably true also of natural selection.

It is therefore probable that the form and

qualities of all animals may be varied by natural selection.

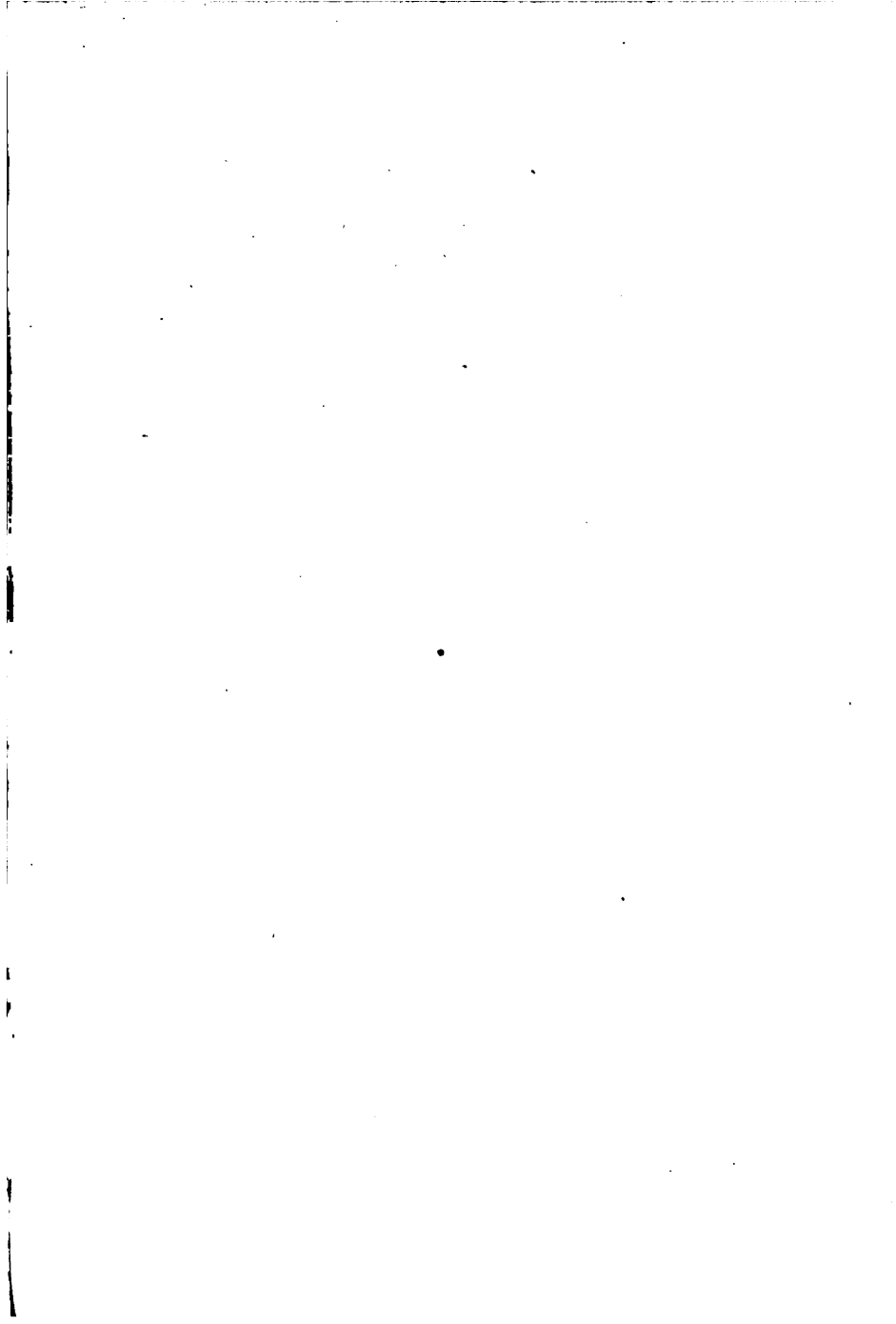
If a certain degree of variation can be established in a given time, it is probable that the longer the time the greater the variation ; and thus, if time enough be allowed, any degree of variation would be accounted for.

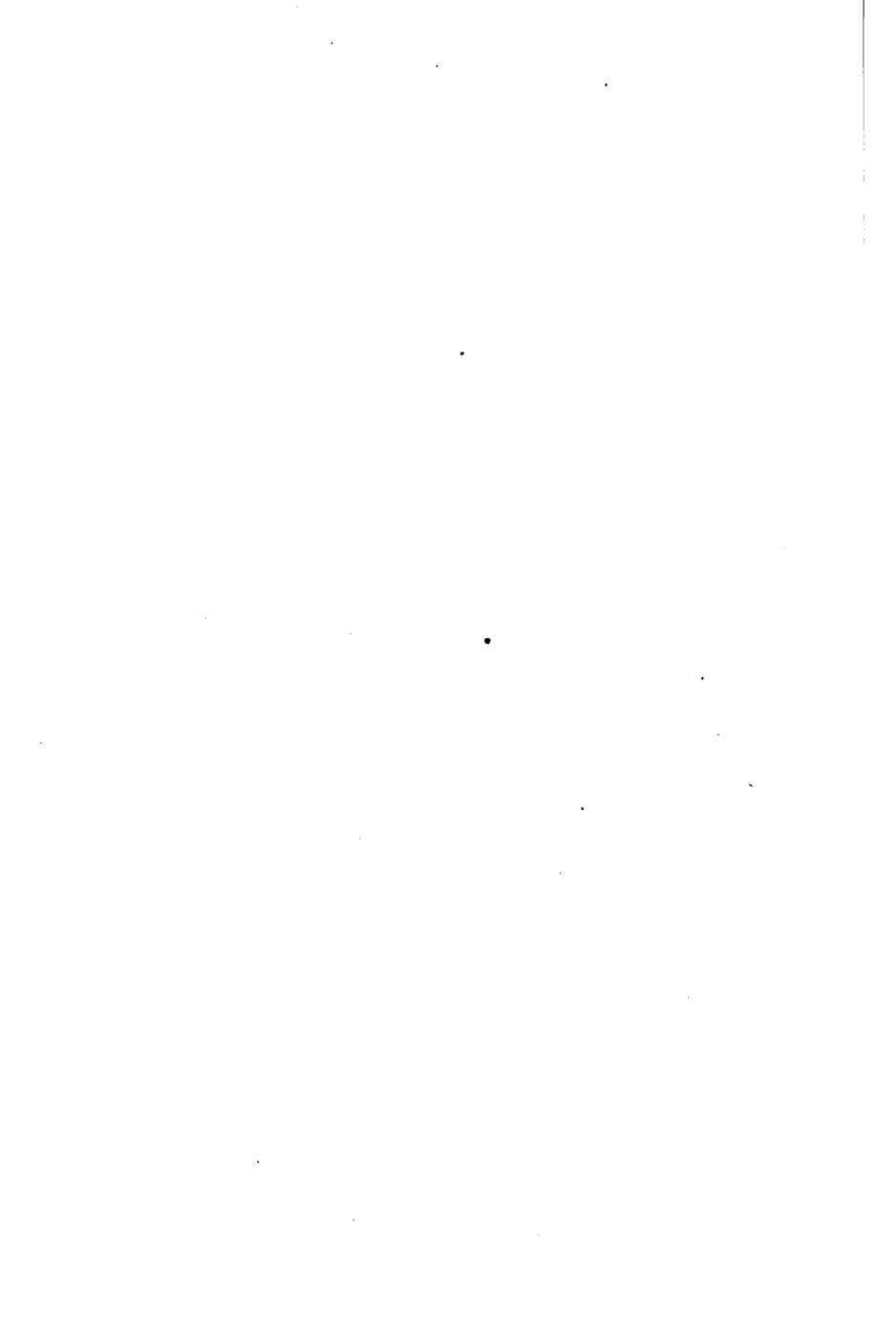
Natural selection would thus probably account for the variation or differences observed between nearly all living forms. And as it would also account for a vast number of observed and collateral facts, the origin of species by means of natural selection is probably a true hypothesis.

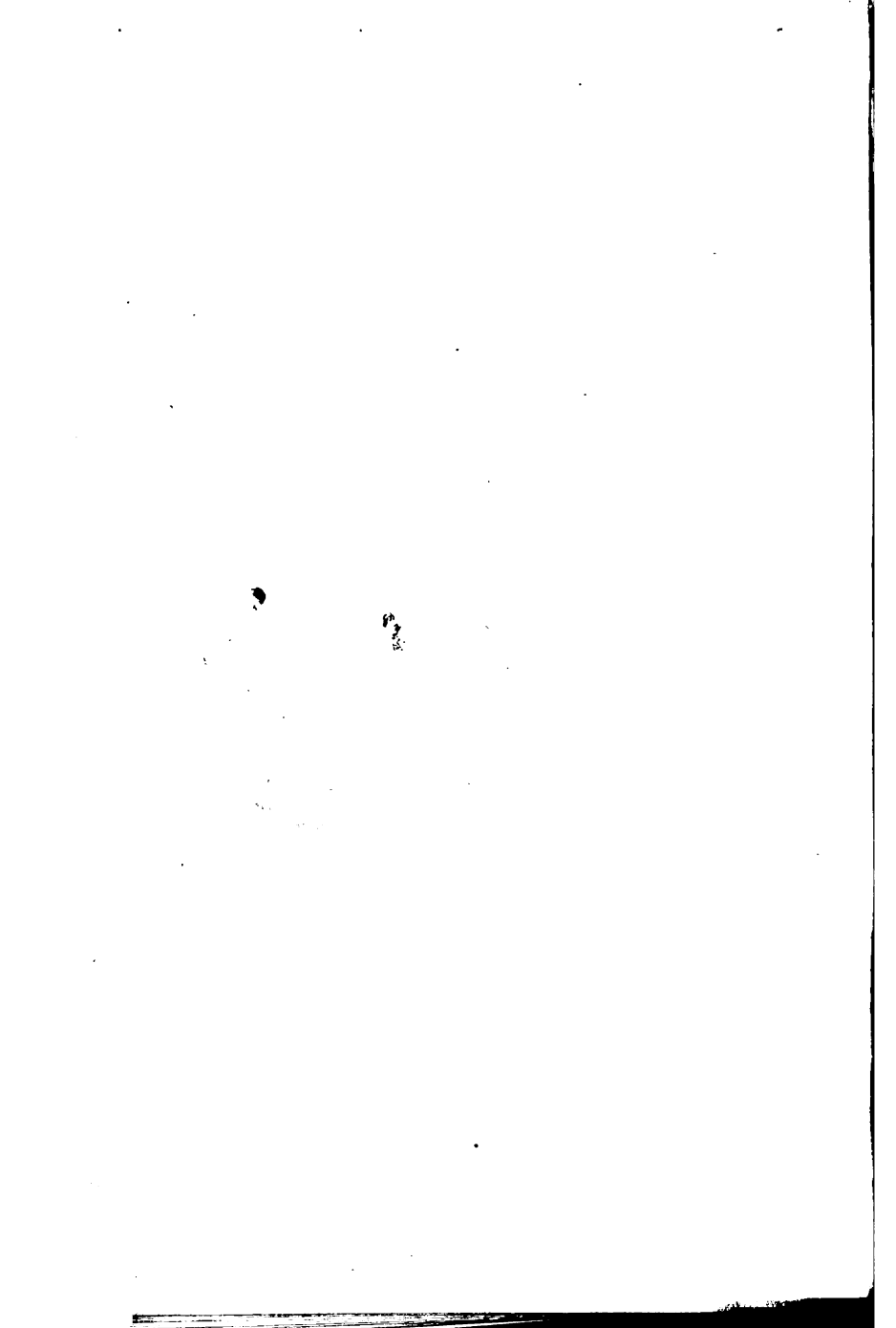
It is evident that it is in this last sentence that the weight of Darwin's argument mainly lies. Hypotheses are probable in proportion as they serve to account for observed facts, and antecedents are probable so far as they account for observed consequents. The correspondence between this circumstance and the inverse law of probability is obviously exact. •

It follows then, from these considerations, that all reason is in my view of it simply a more or less accurate estimation of probabilities, and that it obeys, when analyzed, exactly the same law. There is no such thing as *absolute* certainty obtainable, the subjective state which we call certainty being produced only by an illusion of the imagination. And thus the fundamental principle of the reasoning process is shown to consist merely in the perception of similarity or difference, *i.e.*, imitativeness or non-imitativeness between things compared with each other, inferences following from such comparison in terms of the canon already laid down.

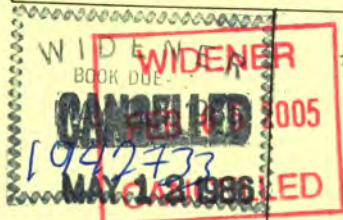
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